

ATHLETIC JOURNAL

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March 1934



Training for the Shot

Henry F. Schulte

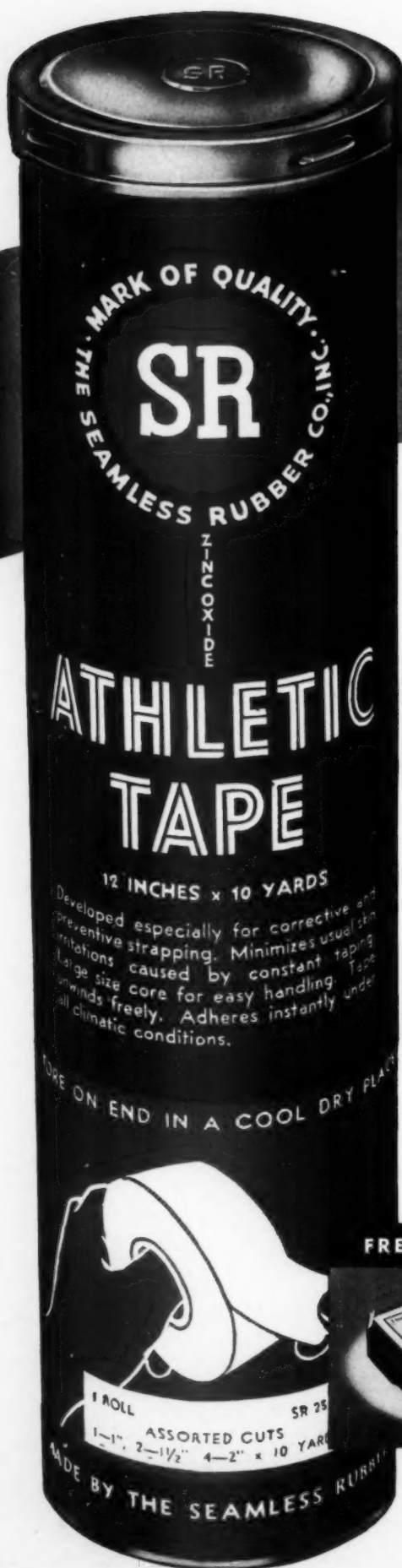
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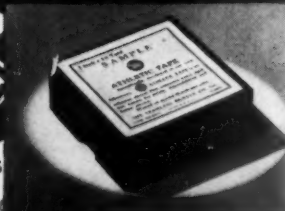
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THE ATHLETIC JOURNAL

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General view of the new Army athletic field, beautifully situated in the highlands of the Hudson River. A combination armory and field house, a quarter-mile track, four football practice fields and two practice baseball diamonds are included in this new field.



The New Track and Athletic Field at West Point

By Leo Novak

Track Coach, United States Military Academy

WITH the recent increase in the size of the corps of cadets from about 1200 to nearly 1800, and the consequent increase in intramural athletics, a demand for more space for sports became very urgent at West Point. Looking about for some possible area which might be developed, the authorities selected a field known locally as the Old Polo Flats. A year of work has now turned this almost unused space into a new and modern quarter-mile track, four football practice fields and two practice baseball diamonds. Near it has been constructed a new combination armory and field house.

The flats, originally a shallow marsh, right-triangular in shape, extending along the Hudson River for 500 yards north of West Point proper was partially reclaimed at the time the West Shore Railroad was constructed in 1888. During dry weather, it was thereafter used for varsity polo practice and some intramural sports. A target range was constructed across it which for many years was utilized during the summer months to train cadets in firing the 30-calibre rifle. Due to the fact that the railroad embankment was some four or five feet above the field, the slightest rain or swelling of the Hudson caused

the field to become wet and unsuitable for use.

In recent years a new polo field has been built near Michie Stadium. Construction of new living quarters for officers on the heights above the target butts made the use of the rifle range no longer possible. For some time it had been hoped that the field could be made usable, but it was not until last spring that funds for the purpose became available.

The first step in re-designing the field was to raise its surface practically level with the railroad embankment. A twenty-inch suction dredge lifted some 55,000 cubic yards from the bottom of the Hudson River. This material turned out to be an

excellent combination of sand, gravel, cobbles, and small boulders. The field was raised five feet in some places, and the finished surface graded to have a slight dome shape. The necessary piping was laid for a built-in sprinkler system which will make possible the wetting of every square foot of the entire field during dry weather. To take care of the normal drainage during rains, an open ditch, lined with concrete, carries surface water to the river.

After the fill had been shaped and allowed to settle, 12,000 cubic yards of black loam topsoil was added, bringing the elevation up another six inches. From the rocky nature of the fill, it is believed that subsurface drains (except for the track) are unnecessary.

In the consideration of what sports should be provided for in the new athletic area, track was given the first attention. The old West Point track was located on the level of the parade ground on the very point of the highlands and was always easily accessible to spring winds. The same area was used as a summer-camp site for the cadets which precluded keeping the track in condition during that period. Its use as a camp also made necessary a grove of trees in the infield which hindered the

THIS article is the second of a series of articles on the construction of an athletic plant. The building of a concrete tennis court was described in the January issue. Suggestions for stadia constructions and designs for scholastic swimming pools will appear in future issues.

Readers of the Athletic Journal will find valuable suggestions in Mr. Novak's detailed description of the West Point track.

view of spectators as well as being a constant hazard to discus and javelin throwers.

In the location of the new track on the athletic field, consideration was given to (1) wind, (2) spectators, (3) parking space, (4) a minimum of interference with other uses of the field, and (5) a minimum of regrading the domed shape of the field.

Ideal Location

All of these requirements were satisfied by locating the track in the northwest corner. Here it is protected from the wind; spectators have a good view and are as far away as possible from passing trains and a road just in the rear of the stands provides easy access and parking facilities. The remainder of the field is ideally located for baseball and football practice, and though some re-grading was essential, the general shape of the field remains the same.

It is possible to have almost all events conducted in front of the stands along the southwest portion of the straightaway. The finish of all races, including the 220-yard dash and 220-yard low hurdles, can be arranged within a space of twenty-five yards. (The straightaway is 715 feet long.) The field events are primarily located to leave space for a practice football field within the oval, but are also located so that spectators in the stands can get the best possible view. Along the inside of the straightaway in front of the stands are located the broad jump and pole vault pits, both of ample size, with runways arranged so that jumping and vaulting may be done in either of two directions. The high jump pit is directly in front of the stands, at the southwest corner of the oval, with shot put and javelin throw ad-

jacent. The discus rings are at the other end (northeast corner) of the field, so arranged that the discus will land in view of the people in the stands.

In the construction of the track, data was obtained from similar projects all over the country. Our track bears a close resemblance, perhaps, to the track at Stanford University. After the oval had been laid out—the curves with a radius at the pole of 120 feet—the ground was excavated to a depth of twelve inches. The straightaway was constructed twenty-five feet wide, the backstretch sixteen and a half feet wide, with the curves enlarging to twenty-five feet where they join the straightaway. On both sides of the excavation, curbing were sunk of creosoted Douglas fir, three by eight inches, flush with the topsoil grade, leaving the bottom of the cut four inches below the bottom of the planking. This curbing is held in place by posts, three by four inches by three feet, bolted to it at four-foot intervals.

Into this excavated, curbed track, there were dumped, first of all, cinders which failed to pass a three-fourths-inch mesh. These cinders were obtained from railroad locomotive burnings. By the use of the lightest roller obtainable, so as not to break up the cinders any more than necessary, this base was rolled to a compact five inches.

On top of this base was laid to the depth of one and one-half inches, redwood bark. In putting down the bark, a sled-like arrangement, made of heavy timbers, and having an exact clearance of one and one-half inches was used. The bark was stuffed under, the sled was moved forward and more three-quarter-inch cinders were thrown on top immediately to hold the

bark down. It is believed that the redwood bark will give a permanent elasticity and spring to the track.

The layer of three-fourths-inch cinders on top of the redwood was compacted to two and one-half inches. The next layer was of smaller cinders, passing a three-fourths-inch mesh but retained on a one-fourth-inch mesh. These cinders were obtained from the post power plant (soft coal.) They were compacted with the light roller to two inches.

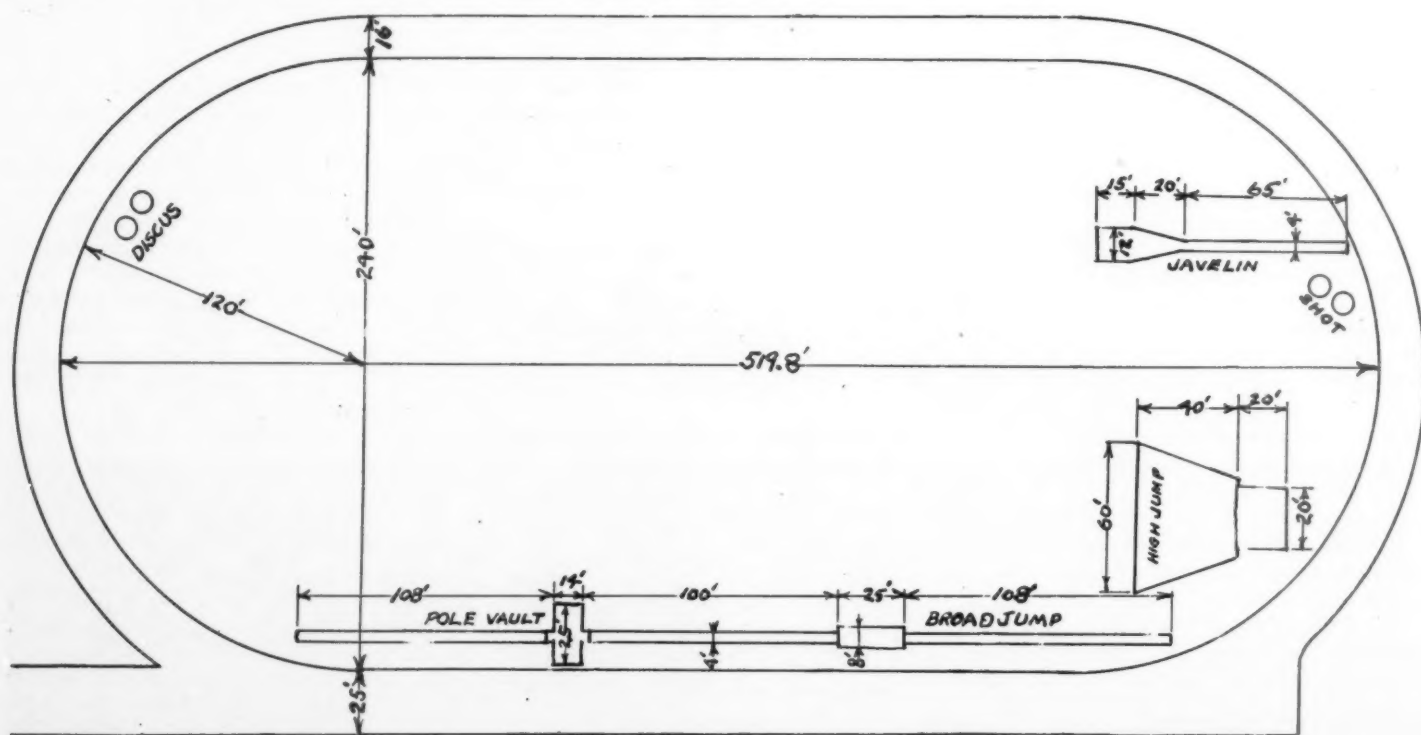
The finishing coat consisted of a mixture of one-fourth-inch cinders and local topsoil in a proportion of five parts cinders to one of topsoil. This formula was determined after tests on various combinations of cinders, topsoil and clay. It was found that local topsoil contained enough clay to make additional clay unnecessary. The final dressing was two inches.

For better drainage of the track, tile drains were built along the straightaway and from the inside of the curves. The bottoms of the jumping and vaulting pits were also drained. The backstretch and the straightaway have a slight elevation in the center of the track and drain to each side. The curves have a super-elevation towards the outside of one inch in six feet.

The runways for the jumps, and the shot and discus rings have blind drains of large field stones, eight inches of cinder base and four inches of blue clay as top dressing. This clay is the same that is used locally for tennis courts, where it has proved unusually satisfactory.

About 1700 cubic yards of cinders of all sizes were used.

The curbing has been finished above the track level with two by three-inch beveled rails, painted white, fastened to the creosote
(Continued on page 43)



Track & Field



THIS article is the second of a series of articles on Track and Field events as announced in the February issue. These studies on the 100-yard dash, javelin, shot put and high hurdles will be followed by illustrated articles in April on the 880-yard run, the broad jump, discus and 220-yard dash.

The editor is indebted for the write-ups that appear in this article to Henry F. Schulte, University of Nebraska; Weems O. Baskin, Jr., University of Georgia; Charles Hoyt, University of Michigan; Glen Hartranft, San Jose State College; David L. Holmes, Wayne University; L. T. Johnson, University of Illinois; F. G. Welch, Kansas State Teachers College of Emporia; Mike Ryan, University of Idaho; Dr. Garfield Weede, Kansas State Teachers College of Pittsburg and John Ryder, Boston College. We further wish to give credit for the film, from which the pictures were made, to the Athletic Department of the University of California at Berkeley.

Training for the Shot Put

By Henry F. Schulte

Track Coach, University of Nebraska

A SHOT putter must have enthusiasm for his event and a willingness to work consistently to master style and bring out the best that is in him. He must strive to develop in himself a sound mental and bodily poise. Physically, it is generally accepted that explosive speed, power and reach are necessary for work preliminary to making a world's record. But many men who have ranked as fine shot putters and have won much pleasure for themselves in the event, have lacked some of these so-called vital physical qualities.

Early Development of a Sound Style

To develop a sound style, the athlete should make progress carefully. He should

do all his work, for a period ranging from a week to a month, from the front half of the circle or, in other words, from a stand. (1) With a putting stance, he should drop his putting shoulder with putting arm relaxed so that the elbow is as low as the back knee. (2) He should start his shoulders over, slicing with the shot arm always trailing until the forward shoulder is almost over the forward foot, the putting arm still cocked to put. (3) He should whip the putting shoulder around. (4) He should whip the putting arm into action as late as it is humanly possible. (5) The putting elbow must be directly behind the shot throughout the action. (6) The shot should be driven past the putter's nose, not *below* the chin nor *over* the head. (7) He should keep his back foot (toe) in contact with the ground until the shot lands. Practically every faulty putter tries to use a foot reverse as a part of the put. It can never be. In actual putting, the feet need not shift at all. The much discussed foot re-

verse, so far as putting goes, is sheer nonsense. A good put can be made only if the foot, leg, spine, shoulder, arm, head make a straight line at say a 38 to 40-degree angle the instant the shot leaves the fingers.

After the putter has acquired a knowledge of correct form (practicing an imperfect style is harmful) and after several days of relatively easy work, he is ready to begin in earnest. Skill, style, timing, etc., come only from much practice.

Later Development

After working from the front of the circle for several weeks of the early season and mastering the long pull and long push or follow-through style from that position, the putter may use the full circle. (1) He should start slowly from the rear of the circle. (2) The hop or glide should take up from two-fifths to one-half of the circle, thus giving the putter driving room to finish in. (3) He should be sure to retain

the style developed in the standing work up to this time.

Faults to Avoid

(1) The most common fault is the foot reverse. Ninety per cent of the shot putters destroy all mechanical power by using the foot reverse. The feet reverse, only after the shot has left the fingertips. (2) Another fault is the shoulder pull around or cock in the middle of the circle. The pull, back or down is, of course, part of the very mechanics of sound putting. (3) The putting action must go from power up to the greatest speed possible. In other words, leg glide, body, torso, shoulders, arm, wrist is the order. Ninety-nine out of one hundred putters let the shoulders, arm and wrist go into action too soon.

Shot Put Winners of the 1937 N.C.A.A. Meet

Sam Francis in the shot was remarkable for several reasons: first, he was not especially tall or heavy, second, he was left handed, and third, but not least, he made some excellent marks despite an injury and ill health in his sophomore year which delayed him one full year in development.

Francis weighed about 207 pounds and is 6 feet 1 inch tall. He had a very fast arm and a very long pull and follow-through in his put. He worked especially for the pull and follow-through during his career here.

Temperamentally, he became, after his first year, an excellent competitor, both in football and track. Furthermore, he was a most zealous trainer, working out regularly and for a long period of time each day. He invariably desired the coach to be present with him constantly during his regular workout. I do not know of any boy who has asked for coaching as constantly as has Sam.

Each day in his workout he would make from thirty-five to forty easy puts and usually a half dozen full or near full effort puts. To some, this may seem a heavy schedule but I believe most boys under work. Much easy work is very necessary. He did much of his work from the front half of the circle where, I believe, great shot putters are made. A rather interesting comparison may be made of Francis and Rhea; Francis found difficulty in doing 46 feet from the front of the circle but did 53 feet across the circle; while his predecessor, Hugh Rhea, did 49 feet from the front of the circle and 52 feet 5 inches across the circle.

In addition to the shot, Francis, had he early acquired a liking for the discus, could have been one of the outstanding men in America in that event, for his long, fast arm and poise in the ring would have made him a remarkable thrower. He threw the discus 150 feet several times.

It is interesting to note that the work of Francis in the shot and discus co-

ordinated with his work in the spinner position in the backfield and vice versa.

Dimitri Zaitz, According to Coach John Ryder

Dimitri Zaitz, who placed second in the 1937 N.C.A.A. meet, was born in Boston of Russian parents. After he was graduated from Boston English School, he spent one year in Huntington Preparatory School, Boston, where he was the best schoolboy shot putter (12 pounds), getting it out around 50 feet.

When he entered Boston College his best put with the 16-pound shot was 43 feet. He first came into prominence in January and February, 1936, when competing against Jack Torrance in three meets. He defeated Torrance each time. The farthest he ever put the 16-pound shot was 53 feet 4 inches. In the Olympics at Berlin, 1936, he had a sprained hand but finished sixth.

Bill Watson, University of Michigan

Bill Watson, who placed fourth in the 1937 N.C.A.A. meet and Michigan's Western Conference record holder in the shot put indoors and outdoors, has two attributes which have already produced records and promise more for the future, according to Mr. Reed of the Publicity Department at the University of Michigan. They are an extraordinary combination of speed and power in his action above the waist, and an infinite capacity for detail.

Most top-flight shot putters exceed Watson in power (he is not a particularly big man, standing 6 feet ½ inch and weighing 196 pounds) and a few may exceed him in speed, but probably no one has combined those two elements as well as he. His forearm action reflects that combination particularly, his snap being among the most pronounced of all present day weight men.

As to his combination of speed and power, it should be pointed out that his abilities are not confined to the shot for he is also conference champion in the discus and broad jump, is a consistent high jumper at six feet and over, and promises to be a leading Michigan candidate in the 60-yard sprint. It is obvious that all these events utilize that combination and emphasize his speed.

To date, Watson has relied almost entirely upon his combination of speed and power in his shot performances, for his form, while improving steadily, remains far from a model. But his consistent improvement in competition reflects a steady improvement in form, the result of his faithful application to detail in that department.

That improvement was climaxed by Watson's post-season competition last summer when in his final appearance, in the Big Ten-Pacific Coast dual meet at Los Angeles, he won his event with a throw of 52 feet 10¼ inches, third best performance

in the world in 1937. In the National Collegiate a week earlier, he had attracted widespread attention with a group of throws which bettered 53 feet, one of them 53 feet 7 inches, all spoiled by fouling.

At Eastern High School, Saginaw, Michigan, Watson rated the national interscholastic honor roll by throwing the 12-pound weight 53 feet 10⅞ inches. With the 16-pound shot as a freshman at Michigan, Watson set a mark of 49 feet 5 inches, which was slightly bettered in his first varsity appearance. Indoors at the Big Ten meet last year, as a sophomore, he set a new record with a throw of 50 feet 5 inches and outdoors set another conference mark of 50 feet 10¼ inches.

The High Hurdles

By Weems O. Baskin, Jr.

Track Coach, University of Georgia

IT would naturally fall to Weems O. Baskin, Jr., Head Track Coach at the University of Georgia to discuss hurdling since Forrest G. Towns placed first in the N.C.A.A. meet in 1937. As Mr. Baskin very thoroughly covered the subject in the April issue of last year, the attention of our readers is called to that article at this time. For the benefit of the new readers who do not have access to that article, a few of the important features are repeated.

Requisites of the Hurdler

A tall, rangy boy at least six feet (preferably six feet two or three inches) in height, weighing between 165 and 180 pounds, is an ideal type. He must be agile, yet so rugged as to withstand the knocks and hazards that a hurdler confronts in his practice sessions and competitive races.

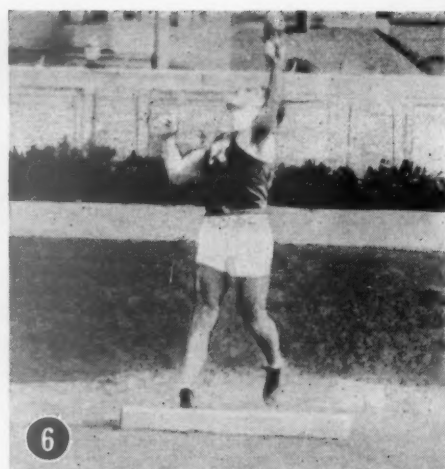
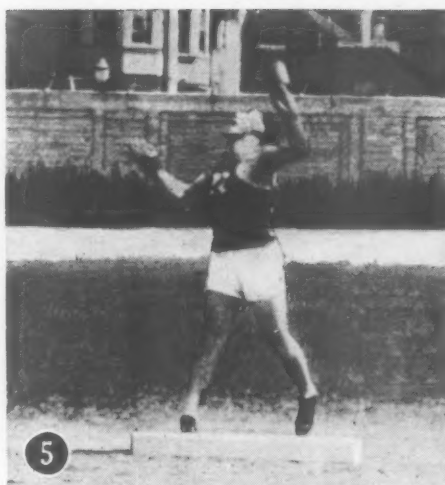
A hurdler must possess competitive spirit, an inborn and innate gift.

Last and most important, speed is very essential for jumping the timbers.

Training Program

The hurdle prospect with the necessary physical makeup, competitive spirit and speed, should take at least fifteen to twenty minutes of setting-up exercises each day before practice starts. The exercises should consist of both ground work and various limbering-up maneuvers over and around an individual hurdle. It is imperative that an athlete develop a sweat by finishing up the exercises with slow and fast jogging to avoid the pulling of muscles. The training and work given a hurdler before the season starts depends upon the time available before the first meet and the importance of the meet or competition to be met.

The same basic form, with slight modifications, has been used by hurdlers from the days of Bob Simpson at Missouri to



Sam Francis Putting the Shot at the 1937 N.C.A.A. Meet

Illustration 1—Relaxation of the whole body is apparent. The easy back leg cross for the start is well shown.

Illustration 2—The fall forward with relaxation—one stage further along.

Illustration 3—The drop into the middle of the circle is well shown.

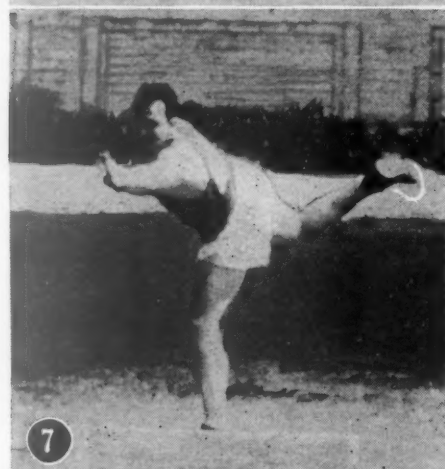
Illustration 4—Both feet are on the ground to eliminate "hang" in the middle. Note the left arm coming back and down; the torso slicing across before the shoulders come into action.

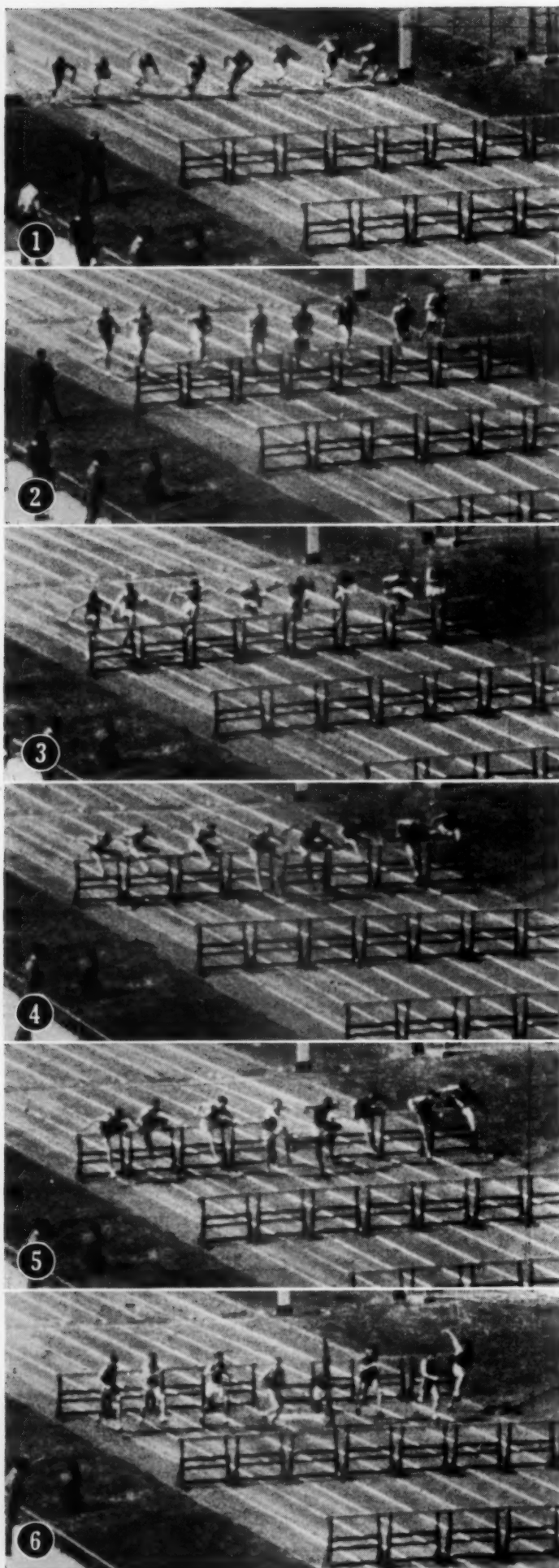
Illustration 5—Much valuable action is not available in this series between 4 and 5, for the start of the body slice and leg drive are missing.

Illustration 6—Note the elbow behind the shot and the terrific kick of the late-going arm which are evident in this picture.

Illustration 7—The very powerful follow that Francis used is here shown. Just a wink between 6 and 7, there is a spot which shows the putter almost out of the circle due to his strong follow.

Illustrations 8 and 9—The recovery to a standing carriage again is shown here.





the present time. The hurdlers coached in this particular style take the regular seven strides to the first hurdle and the usual three between the hurdles spaced 10 yards apart. The stride from the last hurdle to the finish, a distance of 15 yards, varies with the individual.

The drive or lunge for the first hurdle is made with the lead leg swinging forward and upward, with both arms extended forward in line with the leg. The lead leg has a slight bend at the knee and should be swung smoothly like a pendulum.

This puts the body of the athlete into a perfect split over the hurdle, with head up and shoulders square. The height of the head should not vary while the athlete is going over the hurdles. The back leg is brought through slowly in one motion, scissoring with the lead arm, which is swung sideward to the rear and down in order to get the necessary cut-down over the hurdle to allow the athlete to come down running.

Balance and cut-down are aided by the opposite or short arm, which we maneuver a certain way in order to get an excellent kick in coming down off the hurdle. Percy Beard, "Spec" Towns and other hurdlers have demonstrated that it does not make any particular difference whether a high hurdler takes off with his left or right foot. It is more important that the coach train his athlete to come down running, with a good body lean forward in making the drive for the next hurdle than to stress the cut-down on top of the hurdle. The hurdler who takes off on his left foot carries his right leg forward as the lead leg, thus making the left arm the long arm and the right arm the short arm. The right arm is the short arm, whether it is thrown in line with the long or left arm, or allowed to trail.

Valuable Suggestions

To prevent hurdlers from having the dread of an unexpected fall, I have the hurdlers take a nasty spill at least every two weeks. I am also a firm believer in football as an activity for hurdlers out of track season. It develops the ruggedness necessary for hurdlers.

A good hurdler can run into the wind much better than he can run with the wind at his back. The reason for this is the fact that the hurdler has to run more cautiously with the wind at his back to avoid diving into a hurdle.

Schedule of Weekly Practice

The tentative schedule of weekly practice which we employ at the University of Georgia and which was used in developing Forrest "Spec" Towns is as follows:

Monday consists of a light workout and a few setting-up exercises.

Tuesday will start off with a number of setting-up exercises, a few starts; the athletes sprint from 20 to 30 yards. After the hurdler has had time to rest for a few minutes, we have him put up three hurdles, either 12 or 9 yards apart. This enables the hurdler to do work over the hurdle in order to develop balance at a maximum speed. In the first instance, where we place the hurdles 12 yards apart, we find that it is good practice for the athlete to run through the three hurdles, using five strides between each hurdle. This practice enables him to work entirely on form and balance; the latter is the more important thing in developing a good hurdler. There has never been a great hurdler who did not have fine balance over the hurdle. With the hurdles placed 9 yards apart, we are able to increase the speed of our workouts, developing form by using three strides between these hurdles, without the burden upon the athlete of having to fight for each hurdle as he goes over it. We try to spend at least thirty to forty minutes on this type of work without trying to rush the boy; if he becomes too tired, he is unable to improve in his technique of form and balance.

Wednesday consists of setting-up exercises, two or three starts and then running at full speed over three hurdles spaced at the proper distance. This is done after we have spent from ten to

fifteen minutes working on form with the hurdles placed 9 or 12 yards apart.

Thursday, the hurdler will work entirely with the sprinters; he does not work with any hurdles.

Friday, we give the hurdler a holiday.

Allan Tolmich by David L. Holmes

Allan Tolmich did some indoor track work in high school, but did not give it much attention. He preferred tennis and was ranking one man on the high school tennis team.

In his freshman year at Wayne, I saw him playing in the fall tennis tournament and noticed that he seemed to cover the court fast. He had fast, short steps. I tried to interest him in track, but was not successful. During the winter, I finally got him to enter a novice meet and an intramural meet. He took a third in one of the short dashes and a second in one of the hurdle races. In the fall of his sophomore year I kept at him to come out and get down to some real training so that we could find out whether he was what we hoped he might turn out to be—a winner. Finally, in disgust, he gave in and came out for a practice, with the promise that he would stick to it long enough for us to make up our minds that he was no good.

He developed fast, and began winning after a month's training. In fact, he won the dashes and the hurdles in every dual meet that winter and spring, and won some firsts in the state inter-collegiate championship meet.

The next year, his junior year, he began going places, winning seconds and firsts in several of the major meets. This past year, he began setting records, and is continuing to set them in top competition this winter.

Al is not a stylist, by any means, in the high hurdles, but is one of the finest in the lows, an event in which he has never given himself a real chance, due to so many heats in the dashes and the high hurdles in the major meets. In the first place, he is a bit too short to take the highs with ease. He has to *jump* them, to get over them, whereas tall men simply *slide* them. Realizing that if he were ever to become an outstanding hurdler, he would have to be at least a :9.7 sprinter, we concentrated on sprinting far more than we did on form in the hurdles, and he became a :9.7 sprinter. Then we concentrated on him getting to the first hurdle faster than anyone else could get to it, and then in

The High Hurdles 1937 N. C. A. A. Meet

Illustration 1—All hurdlers are breaking off together with the exception of Towns of Georgia.

Illustration 3—Towns has pulled up slightly and the entire field is taking the hurdle together.

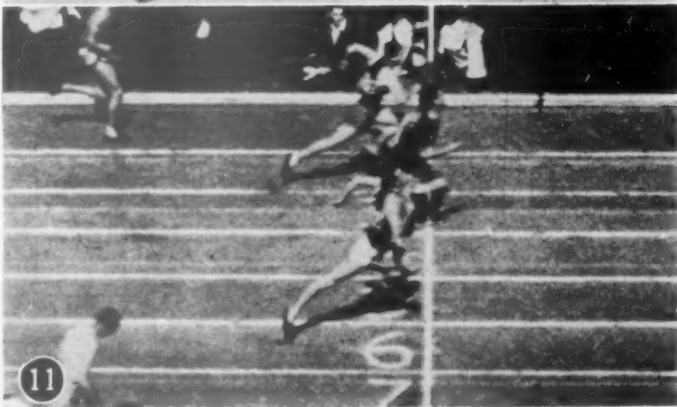
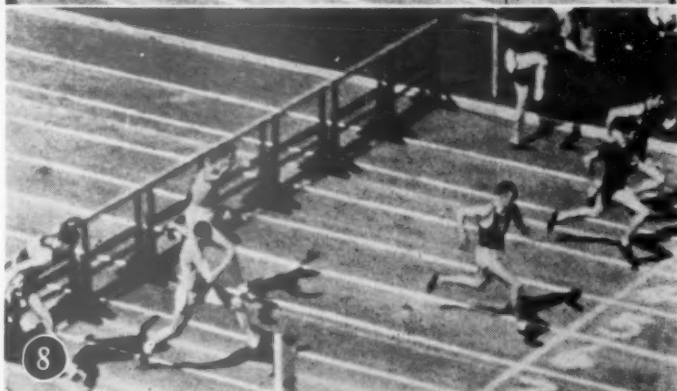
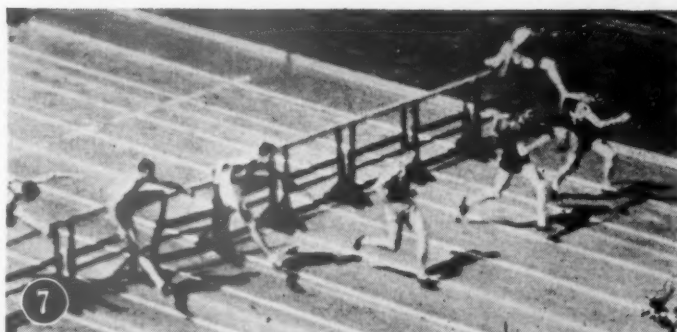
Illustrations 1 to 6—Staley, Southern California, running fifth from the inside shows the best form.

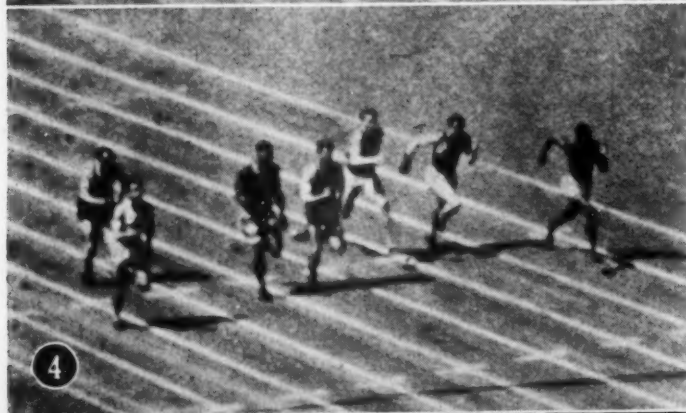
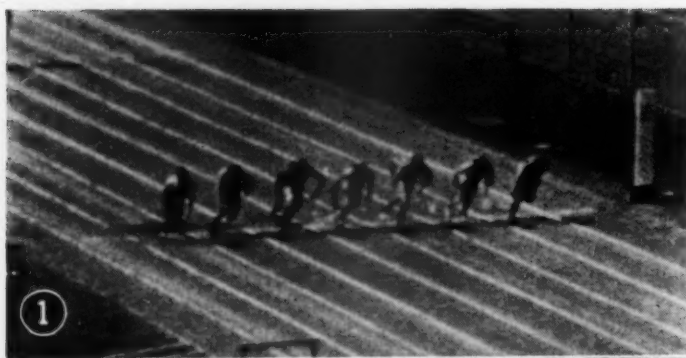
Illustration 7—As the athletes come off the hurdle, Towns and Staley are pulling out into the lead. They have a distinct arm movement but seem to lack leg drive and a forward lean which is necessary.

Illustration 8—A very fine drive for the hurdle is shown.

Illustration 9—Staley, Towns and Tolmich have an excellent lay-out on top of the hurdle. It will be noted that Towns is the only one which both arms forward over the hurdle. The various coaches have different ideas about the position of the arms, whether one or both arms should be forward.

Illustrations 10 and 11—The drive for the tape, for which Towns is so well-known is shown here. The picture shows the narrow escape Towns had in winning this race over Staley and Tolmich.





getting three steps between faster than any hurdler had ever done before. Today, I believe that, with an even start, he is the fastest hurdler in the world to the first hurdle, and that he takes the three steps between the hurdles faster than any other hurdler takes them. He also has a terrific finish after he gets over that last hurdle.

To get to that first hurdle fast, which many hurdlers do not attempt to do for fear of hitting it off-stride, he has put in hours of practice. In fact, our gymnasium is so small that about all the practice he ever had until we got outdoors was on one hurdle. He learned to get to that first hurdle at full-speed. Then he concentrated on balance in landing, in order to be able to get in those three fast steps. His thoughts were all on that "One! Two! Three!" He counted them out as fast as he could count, trying to make his legs work in rhythm with the count. The result was that he began stepping very fast between the hurdles, where many hurdlers, I have always thought, depend more upon rhythm and perfect form over the hurdles, saving their real speed till the last four hurdles.

Al is a fine trainer. He has a competitive spirit seldom equalled. He has a fine mind, and once he sets it on an objective, he saves no effort to attain that objective. We started from the first to train him, not for the dual meets, but for the big ones, talking world's records to him. We felt that he really had the makings of a world-beater. He did not believe so until last spring—and then he set out to train for the race with Towns, Pollard, Kirkpatrick, Stacey, etc., at the A. A. U. championships in Milwaukee in July. He trained so hard that he began hitting hurdles, and finally was almost to the point of believing that he had lost his form entirely. It would interest readers to know that Al was tricked back into form that week. We had him run a full flight of highs one evening. The track was bad. Al ran the flight in 16 seconds. We made the mistake of letting him see the watch, and he was just about ready to quit. Finally we got him to run another flight. We started the watch when he was part way to the first hurdle. When he had finished, we asked him how he felt, and he said he felt considerably faster. Then we showed him the watch, it recorded :14.6. Al was amazed as he had no idea that he was going that fast. That week-end at Milwaukee, he won the 100 meters in the Junior division, and the next day led Towns and the others to the tape in the highs, and a few minutes later set a new record in the 200-meter lows.

Bob Osgood

Bob Osgood's showing in the national collegiates came as a disappointment after a brilliant performance in the Western Conference meet at Ann Arbor three weeks earlier.

In that meet, the Michigan captain, who also was an outstanding member of the crack Wolverine relay team, smashed the American and accepted world's high-hurdles record with a time of :14.0. That performance was hailed by coaches witnessing the event as their greatest experience in hurdling. Osgood demonstrated the hurdling form which is accepted as a model.

It was that form which had overcome a lack of speed and had been responsible for the previous marks of :08.0 for the 65-yard hurdles, :08.5, an American record, for the 70-yard hurdles, and repeated timings of :14.2 for the 120 yards, one made in winning the Big Ten title in 1936.

Vern Sumner by F. G. Welch

With no previous experience in track athletics in high school, the real athletic accomplishments of Vern Sumner came as a sophomore in the 1937 track season. Prior to winning third in the low hurdles and fifth in the high hurdles in the N.C.A.A. meet at Berkeley, he won the 120 high hurdles at the Kansas Relays in 15 seconds. He won both hurdle events in his conference meet and dual meet competition as well. His best performance prior to the N.C.A.A. meet was 23.4 seconds in the

200-meter high hurdles at the Missouri Valley A.A.U. meet at Kansas City.

Sumner is six feet and four inches tall and weighs 195 pounds. His training program for the hurdles is orthodox in all ways except one. As a novice, he seemed fearful of hitting a hurdle and this fear resulted in a high clearance of the hurdle. Furthermore, he was inclined to want to drop out whenever he was thrown off balance. In order to overcome these faults, last year we made it a part of our daily practice to go through three or four hurdles several times every night emphasizing the drive to the hurdle and attempting to knock every hurdle down. Because of his weight, he soon learned that he could hit a hurdle and still keep going.

Sumner has a lot of natural speed for a big man. He will be a better hurdler this year. He can improve his speed in getting to the first hurdle and he needs to adjust his body position after clearance of a hurdle. His faulty body position as he lands over the hurdle can be adjusted, I am sure, by dropping his right elbow as his arms swing back.

Training for the 100-Yard Dash

By Charles B. Hoyt

Track Coach, University of Michigan

IN sprinting, as in every other event in track and field competition and, I suppose, in all athletic endeavor as well, if there is any greater asset than natural ability it is an athlete's capacity for hard work in his desire to improve. Sam Stoller, Michigan's Big Ten and National Collegiate winner in the 100-yard dash last year, proved that statement.

Sprinting Form as Shown in the 100-Yard Dash at the 1937 N. C. A. A. Meet

Stoller's form in the first seventy yards of the race (Illustrations 1-7) is excellent. His forward lean, easy arm action, full knee action with little kick-up all show fine style. However, Illustrations 7-10 indicate that he is over-straining. The body angle is more vertical (compare Illustration 8 with 6); his chin has lifted and there has probably been a shortening of his stride.

In contrast, Johnson has maintained his forward lean throughout. Illustrations 9 and 10 show a marked chin lift but this has not affected his body angle. Stoller's form the first seventy yards combined with Johnson's finish form concretely picture the ideal sprinter.

In Illustration 2, Stoller's form is excellent. His form at this point will enable him to gather momentum faster than the other men can. His head is up. A good running angle has already been reached. His arms and knees are in good position.

Illustration 3—Johnson has lost motion due to so much kick-up with his rear leg.

In Illustrations 4, 5 and 6 all sprinters are running with good form.

Illustration 7—Johnson's style is excellent. He has perfect control. Stoller appears to be straining.

In Illustrations 8, 9 and 10 Johnson shows that he has terrific speed for the finish with good form. His arm and leg action are perfect. His chin appears a little high.



As an outstanding high school sprinter in Cincinnati and as a freshman at Michigan, his application to hard work resulted in his development as a consistently great sprinter despite the discouragement of running throughout high school and until his final year in college eclipsed by such a man as Jesse Owens. His achievements included a place on the Olympic squad in 1936, repeated marks of :09.5 and :09.6 in the hundred, :06.2 and :06.1 in the sixty, and finally his crowning performance in the national collegiates last year.

I am extremely wary of classifying a sprinting type, for our outstanding sprinters at Michigan in the last few years have been very opposite. They are Willis Ward, a big man and long muscled, and Stoller, much more squat in his build and thick-muscled.

Training, of course, is largely an individual matter and Stoller had his peculiar demands. For one thing, he devoted himself on the track to the shorter sprints solely. He was never adapted to the 220 and he ran that event only once at Michigan.

If Stoller had a particular weakness, it was his inability to achieve complete relaxation in a race, as he showed a too-frequent inclination to tie up near the finish, bringing his arms up and straining his shoulders and upper body. This was illustrated in the final Olympic trials in 1936 when he led the field at better than 60 yards and then tied up to finish sixth. We found that work at distances slightly beyond his normal event, as 75 yards indoors and 120 yards outdoors, helped eliminate much of this.

Stoller's outstanding natural asset was his start, and he was certainly one of the two fastest men off the blocks that we have ever had at Michigan (the other DeHart Hubbard) and I say without hesitation that he was one of the fastest men in the country in that respect.

Heavy-muscled as he was, Stoller took a great deal of pre-season work to round into shape. His conditioning work, for six or eight weeks, would consist of jogging and calisthenics such as rope skipping and work on the pulleys and weights.

In mid-season, outdoors, he followed a training program about as follows:

Monday. Two starts, for 20 yards. Seventy-five yards, fast.

One hundred twenty-five yards, at three-quarter speed for 80 yards, then a burst of speed.

Tuesday. Two heats of 75 yards, full speed.

Wednesday. Four starts. One hundred fifty yards at about seven-eighths speed.

Thursday. Fifty yards, fast. Seventy-five yards, fast. One hundred twenty-five yards, at about three-fourths speed for 90 yards then a burst of speed.

Friday. Rest.

Saturday. Time trial if no meet.

Donald Dunn by G. W. Weede

Donald Dunn, Kansas State Teachers College of Pittsburgh, who finished third in the 100-yard dash in the National Inter-collegiate meet is a large limbed lad and is subject to pulled leg muscles. For this reason he has to be brought along slowly in early season to avoid injuries. These pulls are generally accompanied or preceded by a cramped condition and usually occur near the start of his race.

He is tall and comes into a full running position at the start very quickly by the use of powerful leg drives rather than by quick, short or choppy strides.

He is relatively a slow starter because this phase of his training has to be eliminated to avoid pulls until late in the season. He has won the 100 and 220 dashes for three years in the Kansas Central Intercollegiate Conference.

R. S. Grieve by L. T. Johnson

R. S. Grieve, who placed fifth in the 100-yard dash, trained according to the following schedule:

EARLY SEASON BEFORE OUTDOOR MEETS

Monday. Skip rope; jog quarter-mile; stride through several 80 yards at three-quarter speed; pull through 150 and 200 yards.

Tuesday. Skip rope; jog quarter-mile; take about ten starts and strides; pull through 50-100-200 yards hard workout, passing baton.

Wednesday. Skip rope; jog quarter-mile; practice starts and strides; stride 275 yards; take two 75 yards and one 220 yards; pass the baton on a curve.

Thursday. Skip rope; jog quarter-mile; practice starts and strides; take 75-yard dash, 150 yards and 280 yards; pass baton.

Friday. Skip rope; jog quarter-mile; practice starts and strides; take 200 and 350 yards; pass baton.

Saturday. Skip rope; jog quarter-mile; practice starts and strides; float through 150, 220 and 300 yards, using baton on the curve.

COMPETITIVE SEASON WITH A MEET ON SATURDAY

During the competitive season, the rope skipping and quarter-mile jog were continued. The distance of each day's workout varied as follows:

Monday. Starts and strides; 250 yards.

Tuesday. Starts and strides; two 100 yards for time; one 220 yards for time.

Wednesday. Two 100 yards; 250 and 300.

Thursday. Fast 76 yards; easy 150 and 275 yards.

Friday. Warm-up and jog.

Saturday. Meet.

Training of Javelin Throwers

By Glenn Hartranft

Track Coach, San Jose State College

THE qualifications of a javelin thrower are many and varied and possibly more exacting than in any other event of the track and field program. Yet probably more types of men have been used in it than in any other event. Both tall and short, heavy and light men have participated. However, weight and height are distinct advantages.

The ideal participant should be tall with good muscular development and co-ordination, weighing over 175 pounds, with strong legs and a well-developed upper body. Although strength is of the utmost importance, agility and suppleness are essential. He should have the speed of a sprinter, the power of a weight man, the agility of a broad-jumper, and the muscular control of a pole vaulter.

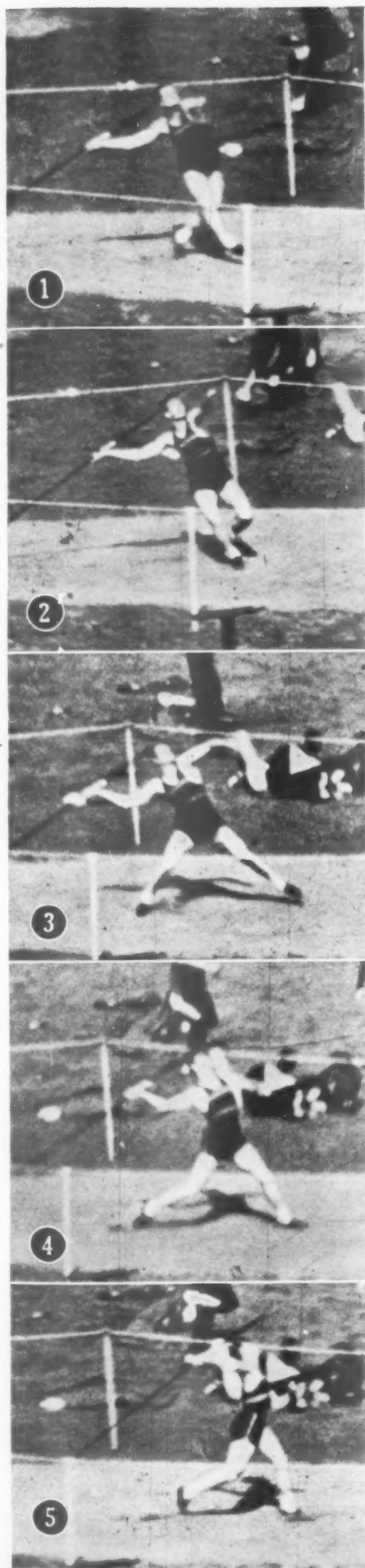
Form is of the greatest importance as in the other field events. Therefore, an early start in training is advantageous. Year-round work to the exclusion of other sports should be advised.

In the fall, we break down the event into its fundamental movements and endeavor to train the individual parts of the body; leg strengthening by 440's and 220's; bar work for the shoulders and body; standing still and driving the javelin into a sawdust pit or a bank for arm and wrist strength.

The first movement we work on is point control. It is essential that the point be kept under control during the whole process of throwing and to train for this, we have the boy run carrying the javelin, and spend much time in swinging it with a full arm swing at the shoulder, keeping the point aimed at a fixed mark. This develops good arm action, a supple wrist, and a good point control.

After a few weeks, he begins to harmonize the separate movements into a few throws a day, increasing the number as time goes on. By the winter or beginning of the regular season, we have endeavored to co-ordinate the run and take-off with the arm and wrist action into a combined throw, stressing good form.

About two months before the first track meet, the javelin



thrower begins to throw with the object in view of getting distance. A month before the first meet he should be prepared to take two good workouts a week with pressure, the other days going back to form work.

During the regular season, the schedule is changed to one day of hard throwing in addition to the meet scheduled for that week-end. The day before the meet is spent in jogging and short sprints and general limbering up with no throwing or javelin work. This is varied by the individual man who in some cases needs work the day before, and improves with that program.

Lowell Todd

Lowell Todd weighs 185 pounds, is tall, and has powerful legs and good back muscles. He uses the simplest form in throwing, advocated and used by the Germans. He grips the shaft with the thumb and forefinger, behind the cord grip, and uses the rest of the hand with a loose grip to steady the shaft for direction and point control.

He carries the javelin during his run with a full arm extension behind his body, with the hand facing out. The javelin is carried slightly out from the body. His lower body is in line with the runway, the shoulders turned slightly toward the javelin. Todd does not use a fast run; in fact, the object of his work at the present time is to develop more speed. However, speed must not be acquired at the expense of point control and a good set at the take-off.

At the end of the run, a simple hop is used to put him into a throwing position.

(Continued on page 35)

William Guckeyson Throwing the Javelin 1937 N. C. A. A. Meet

Illustration 1—A cross-step into a throwing position is here shown rather than the hop as used by Todd. The arm is well back and the javelin carried at a good angle.

Illustrations 2 and 3—Note the first step of the set position with the weight over the right leg and the left leg fairly straight.

Illustrations 4 and 5—The hip is shown coming through, with the arm driven over the shoulder, and plenty of body power.

Illustration 6—Note a definite change in the angle of the javelin, which would indicate a lack of concentration on the point.

Illustrations 7, 8, 9 and 10—A good follow-through, with the body reversed and controlled to avoid fouling.



Handbalancing Routines

By **Hartley D. Price**
*Assistant Professor of Physical
 Education and
 Varsity Gymnastic Coach
 University of Illinois*

POSSIBILITIES for various handbalancing routines are numerous and extremely wide in scope. Only the skill and the comparative weight of the partners determine the relative limit. Team members of long standing should show progressive improvement not only in form but also in the variety of routines that make up their repertoire. However, three factors seem to be fundamental to the successful presentation of all handbalancing routines.

First, the tricks should form a smooth, continuous, and artistic pattern; second, the sequence should be arranged so that both participants may be given the chance to take a momentary period of relaxation; third, an opportunity should be given to the audience to applaud.

A smooth sequence demands a mastery of all of the fundamental handbalance positions. A handbalancing routine demands endurance and stamina; hence, both performers should be in excellent physical condition. Furthermore, they should learn to take advantage of every opportunity to relax. If proper control of the handbalance is attained by the topmounter, he may be able to rest briefly in the handbalance position. The understander, how-

ever, seldom is given a respite during the routine as he is supporting the weight of the topmounter much of the time. He should utilize the short periods between the separate parts of the routine when he may recuperate rapidly if he is in excellent physical condition. However, in some routines the understander may obtain a rest when he is in a prone or a supine position.

Opportunity should be given the audience to applaud. This phase of exhibition work is termed styling. After the completion of one part of the routine the performer may make a slight bow or raise one arm pointed in the direction of a fellow member of the team in such a way that the audience knows that applause is in order. The technique of styling is perhaps difficult to teach but it is of impor-

tance if the act is to appear polished and finished. As a matter of fact, styling may be looked upon as good manners which provide the audience with an opportunity to show its appreciation and approval of the skill and artistry that has been demonstrated. Moreover, during a routine, the performers may turn their heads to the audience during a particularly difficult pose in order to draw applause.

A typical hand-to-hand balancing act is about four to five minutes in duration and usually is planned in two or three distinct parts. The routine is most effective when the participants proceed slowly with their tricks.

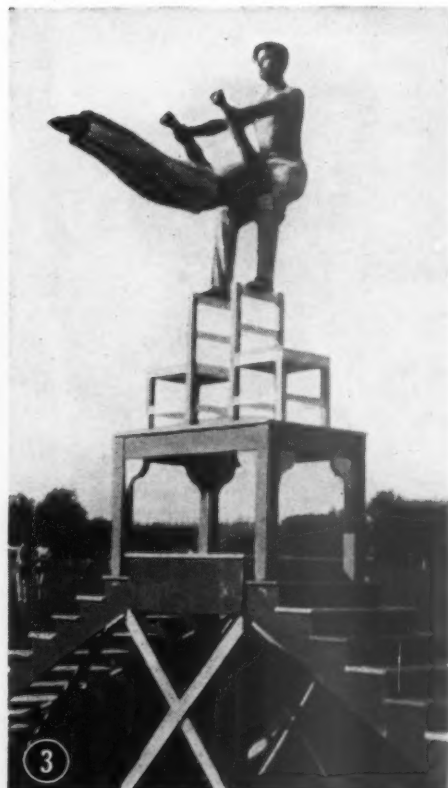
Tricks Necessary for Handbalancing Routines

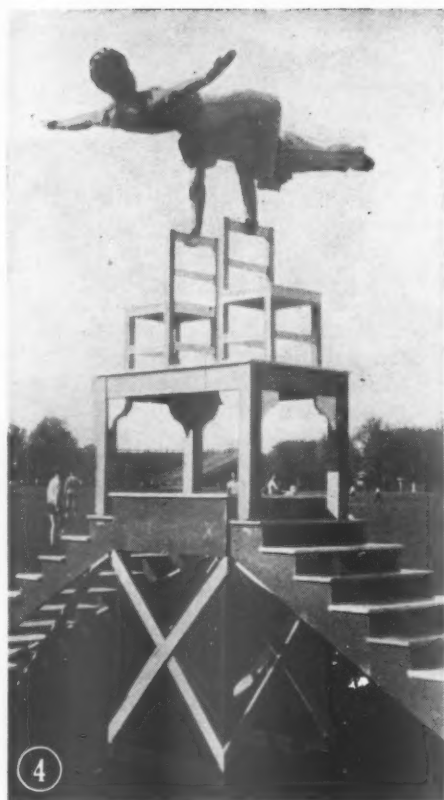
1. Competence in all presses. (Bent arm—straight arm—straight arm—straight leg.)
2. Competence in all handbalances. (Reverse and ordinary grasps.)
3. Mounts.
 - A. Mount to half lever in supine and standing positions.
 - B. Various mounts to stand on shoulders.
 - a. From side with left foot of top-



Previous articles in this series were entitled "Handbalancing," "Advanced Handbalancing" and "Doubles Handbalancing." This article will terminate the series on balancing and will describe briefly the building of handbalancing routines for use in exhibitions or demonstrations.

The Editor of the Athletic Journal is pleased to know that these articles have been well received by our readers, as the many letters written to Mr. Price would indicate.





mounter in left crotch of under-stander.

b. With the understander in a kneeling position, topmounter steps directly on to the shoulder.

c. Topmounter runs up under-stander's back as he inclines his trunk forward.

d. With a cross grasp, under-stander pulls topmounter up to shoulders from a supine position.

C. Mount to high shoulder-to-shoulder balance by topmounter wrapping his legs around the under-stander's waist; then with a co-ordinated movement, the under-stander pulls the topmounter to position.

4. Dismounts.

A. Arch-over from low and high hand-to-hand balance.

B. Twister down.

C. From stand on shoulders, fall together and forward rolls.

D. Back somersault from shoulders.

E. Swing-out dismount.

5. Low shoulder-to-shoulder balance.

6. High shoulder-to-shoulder balance.

7. Hand-shoulder-knee balance (the understander in supine position).

8. Stand on partner's knees. (The understander holds the topmounter at the waist. The topmounter maintains an arched position.)

9. Stand on partner's shoulders. (The heels should be kept together and the understander should pull down hard on the calf of the leg.)

10. Stand on partner's head.

11. Handbalance on partner's knees (the understander in supine position).

12. Handbalance on partner's feet. (See Illustration 1.)

13. Shoulder balance on feet.

14. Foot-to-foot balance.

15. Low hand-foot balance (the under-stander in supine position).

16. High hand-foot balance. (Topmounter stands on understander's hands which are extended above his head.)

17. Lever on partner's feet.

18. Roll down and roll up to a low hand-to-hand balance.



19. Corkscrew low hand-to-hand balance.

20. Corkscrew high hand-to-hand balance (twister up and twister down).

21. From lying side-to-side, roll around sideways to low hand-to-hand balance.

22. Front lever on knees. (See Illustration 2.)



23. Back lever on knees. (See Illustration 3.)

24. Lever on shoulders. (See Illustration 4.)

25. Front and back lever on partner's hands.

26. Seal rolls. (See Illustrations 5, 6, 7, 8, 9.) The topmounter should be able to control a one-arm balance to perform this trick.

27. Jack-knife handbalance. (See Illustration 10.)

28. Cannon-ball to a high hand-to-hand balance.

29. Flag on partner.

30. From a low hand-to-hand balance on floor to a high hand-to-hand balance and return to a supine position.

31. One arm balance on head.

32. Head-to-head balance.

33. One arm balance on one arm.

Miscellaneous Tricks

34. Swan position above head. (See Illustration 11.)

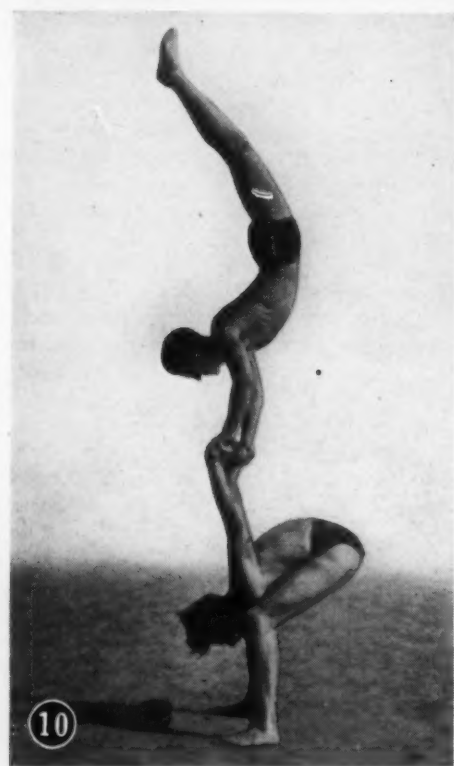


mounter's legs and topmounter assumes a sitting position.
 Topmounter presses up to a half-lever position.
 Topmounter presses into a high hand-to-hand balance.
 Topmounter performs a hand-spring turn-over to standing position.
Intermediate Routine
 Topmounter jumps to a half-lever above head of understander.
 Topmounter executes a straight arm—straight leg press to a high hand-to-hand



Topmounter assists understander to his feet.
Advanced Routine
 Partners lie side by side.
 Topmounter winds himself around one arm of understander and presses to low hand-to-hand balance.
 Topmounter rolls on abdomen of understander.
 Topmounter rolls back into a low hand-to-hand balance.
 Understander stands up holding topmounter throughout the trick in a hand-balance position.
 Understander pushes topmounter from a bent arm high hand-to-hand balance to a high hand-to-hand balance.
 Understander lowers topmounter to a bent arm high hand-to-hand balance from a high hand-to-hand balance.
 Understander lowers himself to a supine position maintaining the topmounter in a hand balance position through this trick.
 Topmounter comes down to a half-lever position between hands.

(Continued on page 43)



35. One arm lever on head. (See Illustration 12.)
36. Handbalance on understander's elbows as he is in headbalance position. (See Illustration 13.)
37. Handbalance on understander's neck; understander is also in a handbalance position. (See Illustration 14.)

Sample Routines

Elementary Routine

Kick into a low hand-to-hand balance.
 Understander brings knees up.
 Topmounter tucks and lowers slowly into a half lever.
 Topmounter places feet on understander's knees, leans forward and pulls understander up to a standing position with knees bent.
 Understander puts head between top-

balance.
 Understander kneels to one knee holding topmounter in a high hand-to-hand balance.
 Understander sits on floor holding topmounter in a high hand-to-hand balance.
 Understander assumes a supine position holding topmounter in a high hand-to-hand balance.
 Execute seal rolls.
 After completion of seal rolls, topmounter arches over to finish.

Creating Interest in Track in a Small High School

By V. W. Drenckpohl
Argenta, Illinois, High School

ENOUGH interest may be created in track and field in a small high school so that a good team may be maintained. The Argenta Community High School has an average enrollment of 125 pupils and we have won in the last six years three county championships and two conference championships, and missed another county championship by two points.

We play baseball in the fall but do not attempt to play it along with track in the spring, as we feel full justice cannot be given to both. In a small school where some of the same boys would be used on both teams, they could put only half of their practice-time on track. They naturally would not show a very rapid improvement in their track and field events, and as a result would lose some of their interest.

Track and Equipment Necessary

If possible, a school should have some sort of a track on which to practice. It need not be a costly one. Any track, whether it is a quarter of a mile or smaller, on which the boys can run seems to have more appeal to them than running up and down a road. A cinder track of course is to be desired, but if one is beyond the means of the school, a dirt track may be made to serve the purpose.

We try to furnish all boys interested in track with a pair of track shoes. Although they get much more pleasure running in track shoes, in many cases, they are not interested enough at first to buy a pair for their own use. By buying several new pairs each year and taking good care of them, we find that the expense is not too great.

We encourage as many boys as possible

to come out for track. Talks in the physical education classes help create interest. We stress the idea that many of the best track athletes are boys who are not good in basketball, baseball, or football. We have found this to be true in our school. This, in fact, is one of the reasons why we feel that the small school should include track in its athletic program as many boys that are not proficient in the other sports may do very well in track and should have an opportunity to take part in inter-school competition. We also talk to the boys individually.

A coach should never be too certain that he does not have the material in his school for a good track team. He may feel that, if he started track, all that he would have might be possibly a good sprinter and a good weight man. But in a great many instances, he will be surprised in the ability that his boys show. We try to get all the boys that we possibly can out for track. They need not always be of the big athletic type. The best distance man that we have ever had to date, weighed only 110 pounds. He holds both our county and conference records in the mile-run.

Dual and Relay Meets Create Interest

It is a good plan for a coach to arrange dual meets with teams of about the same

ability as his own boys. This gives them a better chance to place in their events which acts as a stimulus to their interest. He may have a few men that are good in a large number of events and enter them in as many of these events as possible. It is a better policy to keep them out of some of these events and give some of the other boys a chance to score. He will keep more boys interested, and in time will have enough good boys so that it will not be necessary for him to enter a man in very many events.

A coach should also enter his team in some of the larger meets like the relay meets which are becoming popular in high school. Some of the better men may need stiffer competition than the dual meets afford them, in order to keep up their desire for improvement in their events. These meets also give the boys a chance to see some of the better performers in action, and if they place in these larger meets or possibly defeat some of the boys from the larger schools, a new confidence is instilled not only in the boy who won but also in his teammates, the school and the town. We also feel that our boys get some good out of associating and talking with other performers on the field, who may be stars in their events.

Individual Record Cards

We use individual season cards as in Figure 1 to show the boys what improvement they are making in each event as the season advances. Each time a boy is timed in a track event, or measured in his distance in a field event, usually on Wednesday of each week, a record is made on this card as is the time and distance that he makes in the meets. A boy receives almost as much enjoyment from

(Continued on page 42)

FIGURE 1

NAME.....		Year.....	
Broad Jump	Javelin	Low Hurdles	



V. W. Drenckpohl

FIGURE 2

NAME					
Events	Fresh. A	Fresh. B	Soph.	Junior	Senior
Javelin ..	94'-4"	111'-7"	118'-3"	149'-7"	166'-8"
B. Jump..	16'-3"	18'-5"	19'-5"	20'-2"	21'-5"
220-Dash .	:28	:27.1	:26.2	:24.9	:23.9

Data That Will Aid the Baseball Coach

By H. S. DeGroat

Springfield College, Springfield, Mass.

WITH no idea of making derogatory remarks as to the value of the baseball score book, this article will attempt to point out that there are some things which it fails to reveal unless the coach has some way of picking out the more useful facts for himself. The average good baseball player is a rather important individual and, more often than not, is inclined to consider his batting average and fielding average as indicative of his value to the team. Many a ball player, with a good batting average and with the necessary good fielding average, fails to become a dependable and useful team man on the club.

There are several important factors, the record of which for the season will aid the coach in getting more teamwork from his club and will serve as an incentive for the individuals of the team.

1. The three or five highest run-scorers.
2. Who hit the most singles—doubles—triples—homers?
3. Who were the strike-out kings? Who were the "whiffers"?
4. Who did not strike out even once?
5. Batting and fielding averages.

Seven Other More Important Ones

Just what facts will step-up the team spirit and draw out the best that is in it? There seem to be at least seven factors that will contribute to this part of baseball coaching. They are listed here in the order of their importance.

1. Which players are the most successful hitters with men on bases?
2. Which are the best lead-off hitters?
3. Which are driving in the most runs?
4. Which are getting on base first and are potential starters of scoring rallies?
5. Which are the most dependable sacrifice hitters?
6. Which are drawing the most walks?
7. Which are stealing the most bases?

Note that the regular and widely used batting average is not in this list. Also note that some of the items, late in the list, contribute directly to items listed earlier; for example, the dependable sacrifice-hitter and walk-getter are likely to be the best lead-off hitters or leaders, first to get on base or even the most successful hitters with men on bases.

To bring the value of these facts more closely to his mind, a coach needs only draw from his experience on an early season two or three-game trip on which the first game may have been dropped by a

THE series of four articles presented last year by H. S. DeGroat of Springfield College will be remembered by readers of this publication. In "Organizing the Pitcher's Thinking," coaches found helpful suggestions for their young pitchers. In this article, DeGroat passes on, from his experience of twenty-four years in baseball coaching, hints that will be found valuable to the coach in analyzing the hitting of the players on his club.

close score. He looks over the batting averages and it does not tell him much. But, he may look until he finds which were the most successful batters with men on bases, and also, equally important here, which failed to be successful with men on bases. He may find some of the batters, who had a high batting average, grouped with those who failed with men on bases. Does this tell him anything? If the player with the high average was successful with men on bases half the time or better than half the time, the coach cannot criticize this player. But, if he can point out that some of the players with lower batting averages were the ones who came through with men on the bases while one of the high-average holders failed with the win-

ning or tying runners in scoring position, he can drive home the value of team play.

Successful Hitters

Perhaps it would be best to define success with men on base. A batter who steps up to the plate with men on bases and makes any kind of a hit is successful. But he is also successful as a team man if he draws a walk, hits a fly that scores a run, drives the ball into such a place as to cause an error by the defense, if the situation and the batter cause the pitcher to lose his control and hit the batter with the pitched ball or if he sacrifices successfully. Any of these cases puts the batter on base and advances or scores the base runners. Failure then, would mean that the batter was put-out, struck-out or had hit into a fielder's choice.

After collecting figures for several seasons, I have found that batters who are successful 50 per cent or better with men on bases are generally hitters with batting averages in the .300 or .400 regions. But there may be exceptions both ways. A .300 batter will fail sometimes to be successful 50 per cent of the time. That batter must be considered and studied by the coach to find his proper place in the batting order. It may be that he can not stand the pressure. It may be that he will make a good lead-off hitter.

Again a batter with an average below .300 may be one of those in the group of dependable hitters with men on bases. Warren Huston, who stepped from college baseball into major ranks with the Athletics, was the most successful hitter on the Springfield squad during his junior and senior years. As a junior with a .291 batting average, he was successful twenty-one times and failed only fifteen times with men on bases. He made nine hits, drew eight walks, and hit into three errors while batting, with men on bases. As a senior, he dropped to .250 but was successful seventeen times, failed fifteen times. He made six hits, six walks and hit into five errors with men on bases.

Archie Allen, signed by the Yankees, and farmed out to the Norfolk Club in the Piedmont League, where he led the league this past season in batting average and runs batted in, finished his college career as follows: In his junior season he had a .328 average; successful twenty-two times, failing twenty-one times, but driving in the most runs (nineteen) with thir-

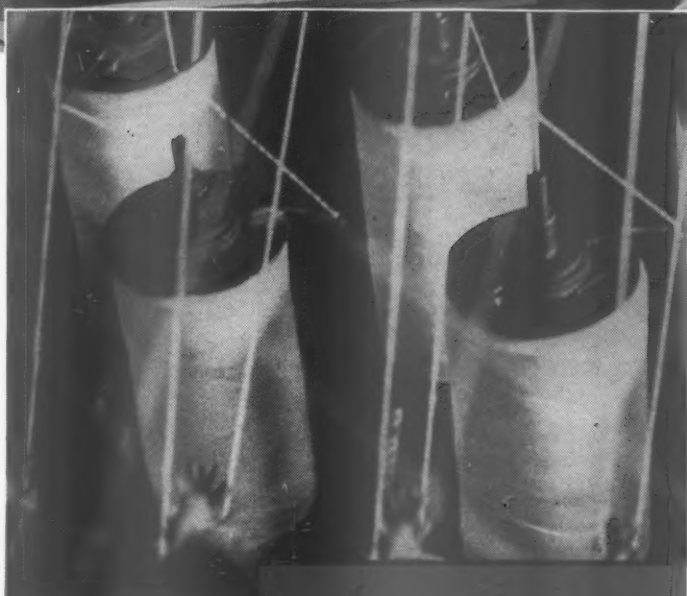
(Continued on page 24)



H. S. DeGroat

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Conditions*
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Bike supporters are made from the very finest materials under scientific and sanitary conditions equalled only in the manufacture of the most delicate surgical dressings. Each supporter is made with the greatest care and most painstaking workmanship to meet rigid requirements on every point. When you buy Bike you know you have a supporter you can rely on!



COACHES and trainers everywhere realize how important it is to keep their teams in good shape. They know that only healthy, strong athletes are able to stand up to the grind of a long season—able to be built into winning teams. These coaches and trainers see to it that the athletes in their charge get good wholesome food—plenty of rest—obey training rules. They know that among the most vital factors in keeping athletes in good shape is the use of really good equipment—sanitary equipment.

That's why coaches and trainers give careful consideration to the supporters used by their teams. They know that all supporters are not made of sanitary materials or under sanitary conditions. They know that some supporters are carelessly made—of poor materials—even in unclean surroundings and they cannot afford to take chances with equipment which might mean infection—sickness or loss of efficiency to their teams.

Intelligent coaches and trainers play safe with a supporter they know about—a supporter they can count on. They order Bike—the supporter worn by 2 out of 3* athletes throughout the country—the supporter they know is made from the finest materials with the same care given surgical dressings. Don't take chances with your teams. Join these thousands of coaches and trainers and play safe with the best! Order Bike for your athletes.

**Impartial survey by A. C. Nielsen Co.,
revealed 2 out of 3 athletes wear Bike*



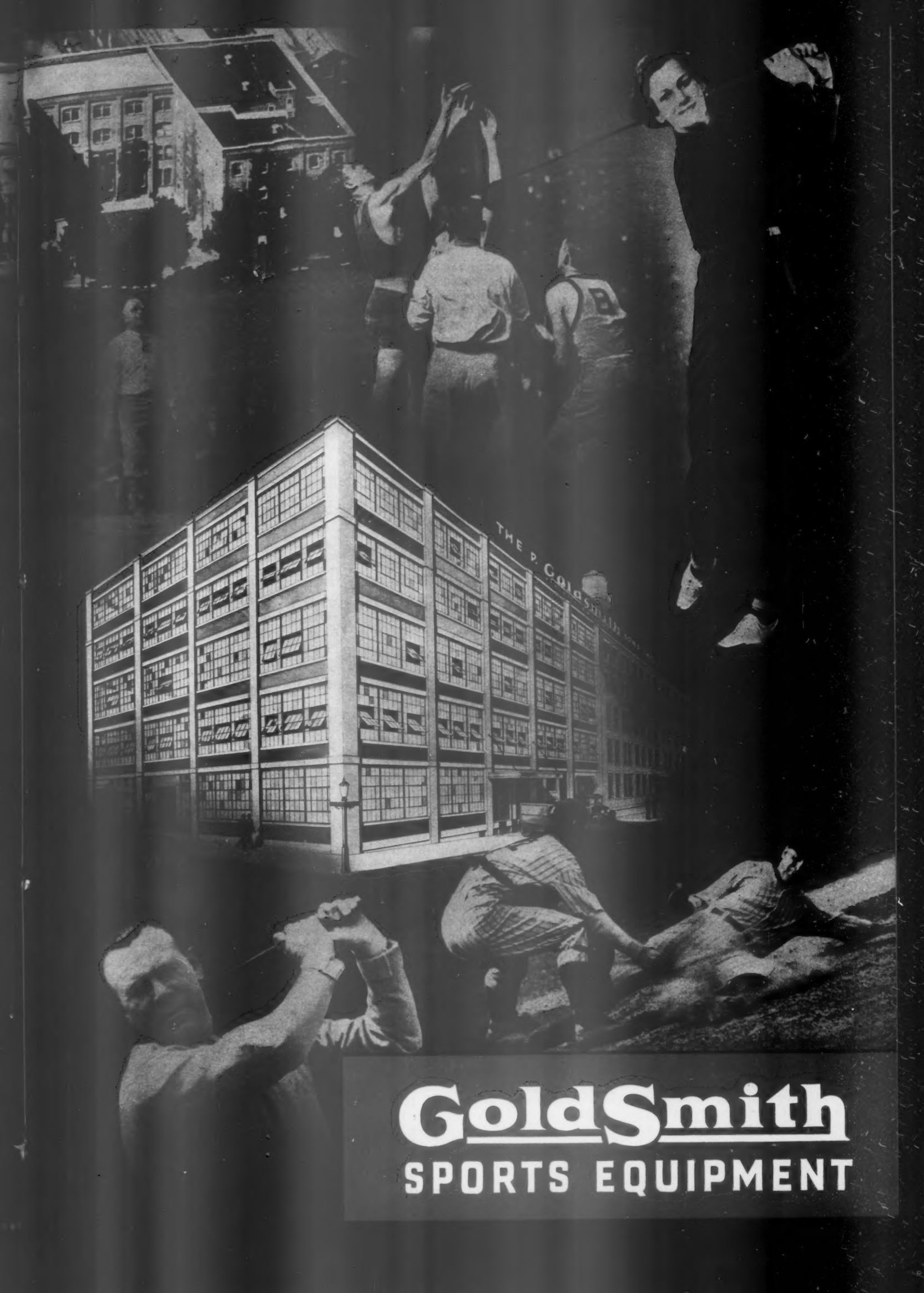
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SPORTS EQUIPMENT

Data That Will Aid the Baseball Coach

(Continued from page 20)

teen hits, one walk, hit into seven errors, hit by the pitcher once. His hits included two home runs, two triples and three doubles with men on bases. As a senior, Allen again led in runs batted in with his average at .382; successful sixteen times, failing nineteen times with men on bases. He again made thirteen hits, drew one walk, hit into only one error, and was hit by the pitcher once with men on bases.

In the season of 1934 a .300 hitter, Captain Scott, was successful only thirteen times and failed twenty-one times with men on bases, but as a lead-off hitter his record was 50 per cent successful. He reached first base seven out of fourteen times when he acted as lead-off hitter. In 1936 another hitter (Keith) with an average of .321 had a similar record, being successful fourteen times and failing twenty-six times with men on bases, but as lead-off hitter he had a record of reaching first base seven out of eleven times. These are the men who might well be shifted to lead-off position if there are other men with high batting averages who can better stand the pressure of batting with men on bases.

Lead-Off Hitting

Second to ability to hit with men on bases is the ability of the player to reach first as a lead-off hitter. Any study of baseball records will show that the number one man in the batting list steps up to the base to start the inning about one third more times than any other batter in the line-up. It is surprising to some persons to be told that every batter in the line-up should be coached as a lead-off hitter because he needs to face that situation time after time during the season. The success or failure of the lead-off man determines the tenseness of the inning as a rule. If successful, the pitcher must change his style because he has a runner on base. The infielders must shift. There is a tenseness among the inexperienced and unseasoned players that contributes to the situations and results that follow.

Can any baseball coach lose anything by having an assistant manager keep record of the success or failure of each batter as a lead-off hitter? If one of his men with a good batting average does not drive in the runs or seem successful with men on bases, perhaps he will make a better lead-off man. If no change was made one season, how about making that shift to start the next season? It is true, that the better the lead-off hitter and the better each man in the line-up is as lead-off hitter, the better the offense will be and the more the coach can sit comfortably on the bench and give signals or let his

players hit away and watch the other team do the worrying.

Batting in the Runs

The coach who knows which men are driving in the runs can begin to arrange his batting order if things are going wrong. If he knows what seemingly good hitters are failing with men on bases, and those who are more successful, he can more easily re-arrange them. It is *always* best to have some facts to show why this is done. When it comes down to the player who drives in the most runs for the season, one usually finds that this player is not only a dependable hitter, but also a *hard* hitter. Some hard hitters are not always good as lead-off players. Some dependable hitters are very good lead-off batters, but they are too valuable to be considered for the number one man in the batting order. If two hard hitters, who are also dependable hitters with men on bases, are batting fourth and fifth in a batting order that has a good lead-off hitter followed by a good bunter or hit and run artist, and a steady batter at third position, the one in fifth place is more likely to drive in the most runs rather than the hard hitting clean-up batter. Why is this? It is because the clean-up man is setting the stage. He may be driving in runs but, on the average, he will be moving himself and others on the bases into scoring position where the number five hitter can make his kill of two or more runs at a time.

Getting on Base First

Of what use is the information that certain batters are getting on base first, regardless of whether they come up second or third in any inning? This situation can only happen, of course, if the other batters are unsuccessful in reaching first base. These facts may tell the coach only that the batter is trying all the time. A coach needs only point out to his squad the *times* when games are won or a rally made with two down in some inning. Perhaps many coaches have overlooked the fact that a batter stepping up to the plate with two down is facing certain conditions quite different from those faced by a lead-off hitter. A hitter is likely now to find the pitcher easing up, with the idea of allowing the defense to put him out. This batter might well try to pick his ball, especially in the late innings and when fighting to tie the score. At least, the fact, that the coach is keeping a record of which man gets on base first, will give rise to thinking and to more coaching about the likely situations that arise in the game and how the batter should face them.

Who Is Doing the Sacrificing?

Nothing can better drive home to every member of a team the value of the ability to sacrifice successfully than to know those who fail the team and those who are successful when ordered to bunt. Naturally, the public cannot understand why the coach does not order a bunt in some situations when it seems most logical. The thing they do not know is that the batter coming up is not a dependable bunter and therefore the coach must try the other way. It also drives home to the coach the necessity for training every player to bunt.

Who Are Drawing Walks?

The batters who draw the most free trips to first base are worthy of notice by any coach. The ability to draw a base on balls in baseball usually indicates the cool batter who can be a dangerous hitter, once he learns to pick the ball that he likes.

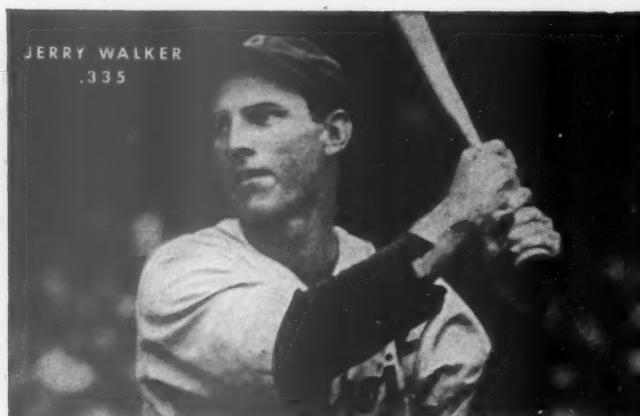
One need not dwell longer upon the value of collecting facts of this nature about each player as the season goes along. This data will tell the coach many things if he takes time to study it, and if he is able to interpret it or to use it to guide him in his training of the squad. It certainly sets the players thinking less about the batting average and more about those things that make for better team play.

A personal experience of last season proved the value of keeping such a record. After three games it was noted that one batter in the line-up had only one hit out of nine times up. The batting average would have put that player on the bench. But as I looked down the data sheet the following was found: (1) With men on bases this player had drawn five walks and sacrificed successfully twice. He was successful seven times on that basis and had failed six times with men on base. He was successful over 50 per cent of the time. (2) The only time that he had been lead-off hitter he made his lone hit. (3) He had struck out only once. He, therefore, had been hitting the ball when he swung. (4) He had made no errors.

This player was kept on the batting list. He banded out a triple and drew one more walk with men on bases; getting one out of three in the next game. In the fifth game, he got two singles out of three times up and added two more free trips to first base to his record of walks. He drove in two runs.

The assembling and organization of the facts mentioned in this article are shown in the accompanying data sheet.

(For chart see page 26)



A QUARTET OF HITTERS

and a word about Spalding Autograph Bats



TAKE A LOOK at the quartet of hitters shown on this page...

Then, let your Spalding representative show you Spalding Autograph Bats that bear these hitters' names.

That's one definite move you can make toward boosting your players' batting averages for 1938!

Every Spalding Autograph Bat has

TWO features that aid the player—and the coach: (1) "Resilite" treatment—which presents a hard, solid point of percussion, yet maintains the natural whip of the handle so necessary in propelling a long ball; (2) "Safety Grip Dots"—to assist the player in hitting "with the trade-mark up"—for POWER DRIVES.

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BASEBALL COACH'S DATA SHEET

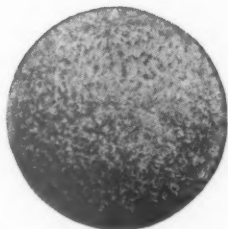
GAME or
 PLAYER _____ POS. _____
 OR
 SUMMARY thru _____ GAME.

Players or games	→
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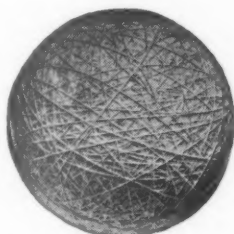
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1. PERFECT SPHERE—that's what makes this a perfect Kapok Core. It is formed to standard size and weight and it makes a perfect base for the...



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Base Ball and Soft Ball Equipment

Timely Football Suggestions

Quarterbacking

By L. P. Dawson
Tulane University

IN his paper on Quarterbacking, L. P. Dawson of Tulane emphasized the greater need, in these days of open play, of a quarterback who possesses intelligence, enthusiasm and physical ability. The first of these, his mental ability, may be judged fairly well by his scholastic record, but to this must be added ability of sensing the right thing to do, which the coach alone can determine as he works with the candidates for the quarterback position.

After selecting the possible prospects from the freshman squad in spring practice, Mr. Dawson meets with them twice a week for eight or ten weeks, until he feels that they have the necessary grounding in the fundamentals. During the summer, these men are contacted occasionally and asked to work out various series of plays against probable defenses that they will meet in the fall.

Qualifications of a Quarterback

"A good quarterback must possess several important qualifications. (1) He must be willing to learn and be capable of learning the duties of every man on every play. This is important before he is able to tell whether the play that he has in mind has a good chance of working against the opposing defensive set-up. Furthermore, he must be ready to tell, without hesitation, a teammate his duties, should the player become confused. (2) He must have a good voice and develop rhythm. A clear, snappy voice will give a team the precision and dash necessary in its offense. (3) A quarterback must be cool and confident. He must gain the confidence of his teammates through his own ability as a player. The coach should do everything possible to develop the team's confidence in him. (Pointing out a quarterback's mistakes in front of his teammates is poor policy for a coach.) (4) It is necessary that the quarterback be capable of sizing up his opponent's weaknesses. The quarterback may be given a fine assortment of plays and the personnel to execute them, but if he does not use good judgment in his selection, he will make very poor progress as he meets opposition of equal ability. (5) He should be reasonably proficient in other departments of the game. It would be useless for a quarterback to encourage his teammates to block, if he were not setting a good example himself. (6) It is important that he know the abilities of the

IT was announced in the February issue that the paper on Quarterbacking, read at the American Football Coaches Association Meetings in December by L. P. Dawson of Tulane University, would be reviewed in the March issue.

A few suggestions, especially applicable to captains on certain football rules, made by Fred E. Gardner, a long-time official in the Big Ten Conference, are presented at this time.

Since heavy responsibilities are placed upon captains and quarterbacks from the beginning of spring practice until the close of the football season the following fall, coaches are urged to call the attention of these men to the worth while suggestions of Mr. Dawson and Mr. Gardner.

various men on his team, for he may have a special job of punting or passing that can be better handled by one punter or passer than by another. He may have one ball-carrier who is more sure to be successful in driving for a couple of needed yards; he may have one back who is more apt to go all the way for a score or he may have another back more reliable when the pressure is greatest. (7) A quarterback must be 'thick-skinned' to outside criticism and must be prepared to take it. He will make mistakes, as all quarterbacks have done and will do, but he should try to profit by his mistakes rather than let them get his goat."

Duties of a Quarterback

Mr. Dawson enumerated several duties of the quarterback. (1) He must know not only his plays, but the offensive assignments against all probable defenses, the five, six and seven man lines with their 1-2-1, 3-2, 2-2-1 and 3-2-1 secondary arrangements. The variety of defenses developed during the past two seasons has put an added burden on the quarterback. The speaker suggested that coaches may have to cut down on the number of plays and have them adjusted to the increasing number of different defenses. Spectators will see a less varied but a more smoothly working offense, Mr. Dawson prophesied.

(2) The quarterback must call his plays in a logical sequence and, at the same time, select the plays that are best suited for the defense. Although many coaches no longer believe in the old idea of certain plays on certain downs, quarterbacks still have the habit of calling their plays in regularity; an off-tackle on first down; a buck on second down and short yardage; a trick play on second down and long yardage; a buck on third down with short yardage; a pass on third down with long yardage.

(3) In working a series of plays, it is the duty of the quarterback: (a) To use the type of play that takes advantage of the weak spots in the defense; if none are visible, he should attempt to find one or put enough pressure on one spot to force a weakness. (b) To change the series as planned, because the first play ended in a bad position for the play that was to follow or because a shift in the defense occurred or a new weakness was discovered.

(4) It is the duty of the quarterback to think for himself. With hundreds of different situations arising on the field, it would be ridiculous for him to memorize what to do. Fundamentally, he should realize the different purposes of a punt; he should know that the quick-kick is an offensive rather than a defensive weapon and that it is not effective unless it goes over the safety man; he should believe that passes should be called for definite reasons, that they are more successful when not expected.

Do's and Don'ts for the Quarterback

Run your team and be the boss. Have confidence, believe in yourself. Stay cool, no matter what happens. Don't let your teammates know if you are puzzled or in doubt.

Have complete command of every play given you. Know your backs, their strength and weaknesses. Know distance to be gained, the down, position on the field, time of game and score. Play what the defense is not looking for. Gamble when behind; be conservative when ahead. Hurry when behind; take your time when ahead. Know if you have had your limit of time-outs; try to call the rest preceding your kick. Hang onto the ball, when outclassed in punting or when playing against a powerful offensive team.

Do not call a play until everyone is ready. Concentrate on straight stuff until it quits working, then bring in deception. Have a big gainer ready when big yardage is needed. Repeat successful plays. Use your successful plays a lot. Do not depend on one style of attack. Have attack planned for scoring zone, but do not change an attack if it is going well. Watch for chances to use your trick plays. Trick plays work best when defense is in the air following a big gain or recovery of a fumble by offense.

Spread out your defense for flank plays and close it for line plays. Know when not to pass. Use a pass over backs that come up fast. Use reverses against a sliding team. Use cross-blocking plays against fast, straight-in chargers. Do not loose the ball on fourth down except near the opponent's goal.

SIX MAN FOOTBALL HERE TO STAY

1937 All American Selection Confirms Success of Six Man Game

Six man football, the game that gives the small schools a chance for a place in the sun, is sweeping the country with all the force of a tidal wave. This is not a passing fad either but rather it is the logical outgrowth "of necessity" that "is the mother of invention."

The fact that six man football played by four small Nebraska High Schools in 1934 is now played by over a thousand schools from Main to California is ample evidence of the great and growing popularity of this game.

Idea Originated with Walter Camp

Stephen Epler, who organized six man football received his inspiration from Walter Camp, the father of American Football. Way back in 1889 Walter Camp in his book of college sports said: "Many times the sport (football) is not undertaken because it is not possible to be sure of 22 men. This is a great mistake for even with six men on a side almost all the plays can be effected and the sport be just as enjoyable and equally good practice."

The success of six man football today certainly justifies that statement of Camp's. The fewer men on a squad the smaller the amount of equipment needed. The savings in traveling expense also lessens the cost, making football possible in small schools where self support is impossible. But the big reason why the game has taken hold is that it is a sport packed full of thrills for the spectators—and after all it is the fan who supports football.

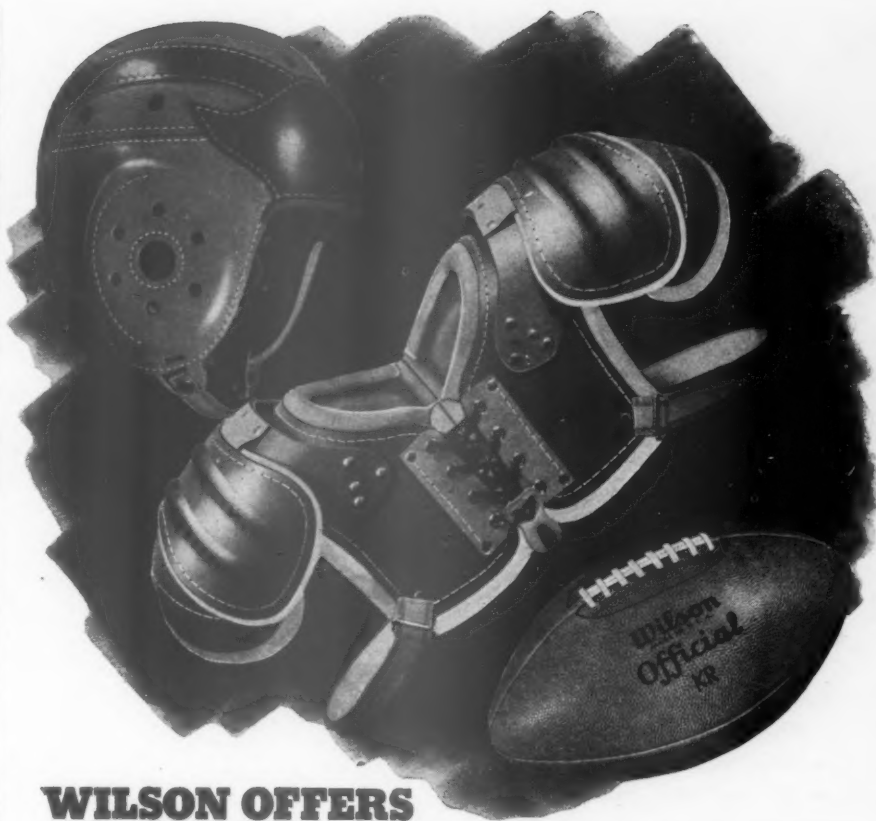
Six man football is actually faster than the eleven man game. It is full of action and scoring. Obviously, the play is more open and the average of completed passes is much higher than in the eleven man game.

Uncovers Football Talent in Small Schools

For these reasons and due to the fact it offers an opportunity to uncover football talent in schools that would otherwise be overlooked, six man football is bound to grow. In high schools with an enrollment of two hundred or under, which composes seventy percent of high schools in America, six man football offers the opportunity for the small school players to capture the headlines formerly monopolized by students of the big schools and colleges.

Now public recognition of the fact that a small school is producing men who can run, pass and kick with the best of them is assured by the all American six man honor roll inaugurated by the American Boy Magazine at the end of the 1937 season.

Additional proof that six man football has established itself as an organized sport is the fact that two National Motion Picture Companies have prepared short features of the game. The well established status of the game is also evidenced by the fact that there is an official handbook giving the rules of the game and how to play it.



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Give your team the kind of protection that is endorsed by such coaches as Charley Bachman and Lynn Waldorf. It is the kind of protection that enabled Ohio State and other leading Universities to complete tough schedules without major injuries.

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WILSON FREE SHOULDER PADS. Here's maximum protection and free action with minimum weight. Airlite rubber under fibre protects collar bones, shoulder points and deltoids against injury. Note hinge joints for free action.

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Men mentioned are retained on Wilson's advisory staff





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Alta-Co, odorless fungicidal solution, helps control this infection. Used in the Dolge Foot Tub as a preventive—and in the Dolge Foot Form as a treatment—by many leading colleges and prep schools. Verbatim reports of clinical tests by medical authorities available on request—including proof that Alta-Co, diluted in 10 parts water, kills Athlete's Foot fungi in less than 30 seconds.



Dolge Foot Tub (don't confuse with Foot Form) made of non-blooming, flexible, black rubber in 1 piece. Has non-slip tread inside. Suction cups on bottom make it non-skid. Size 20 x 20 inches. Holds 2 gallons of Alta-Co solution.

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ALTA-CO

The C. B. DOLGE Co.
WESTPORT, CONN.

Take advantage of the wind when you have it; it is the easiest way to gain ground. Know as much as possible about your opponents before the game.

An Explanation of Certain Football Rules, That Captains in Particular Should Know

By Fred E. Gardner
Big Ten Official

THE belief that most football captains are too busy with their studies, football practice and other university, college or preparatory school activities, to devote much, if any time to a study of the rules of the game is responsible for this article. A clear understanding of the rules, somewhat complicated as they are, requires much time and study, no doubt more than is available to many captains.

In officiating, and particularly in refereeing, over a period of years, I have been impressed with the fact that many captains are somewhat confused concerning certain so-called fundamental rules and their application. If captains gain a clearer understanding of any of the rules touched upon which have not been clear to them, then this article will have served its purpose.

1. Prior to the beginning of the game, the visiting captain calls the toss. The winner has three choices: (a) the goal he wishes to defend, (b) kicking-off, or (c) receiving. This choice once made is *not* revocable.

2. On a kick-off, at least five players of the receiving team must be between their own 45 and 50-yard lines until the ball is *actually kicked*. After a safety the same rule applies except in relation to the 30 and 35-yard lines of the team scored upon.

3. If the ball goes out of bounds on a kick-off (except after being caught and fumbled) the opponents have the option of putting the ball in play 10 yards (according to 1937 rules, probably 15 yards 1938, approved ruling not yet made) in from where it went out of bounds or anywhere on the 35-yard line.

4. On free kicks (which include kick-off, free kick after a fair catch and free kick following a safety) all members of the kicking team, provided the ball is kicked 10 yards or more (unless it is touched by an opponent) and provided further that all members of the kicking team have remained in bounds, may recover but not advance the ball.

5. The only exception to the rule that the kicking team may not advance a kicked ball, if legally recovered by it, is the ball that, kicked from scrimmage, does not cross the line of scrimmage. In this instance, it may be recovered and ad-

vanced not only by the kicking team but by the opponents.

6. The umpire has primary jurisdiction in relation to the legality of line play, such as holding, illegal use of hands and arms, etc. The captain should advise his line-men, if violations of these rules occur in the line, to report them to the umpire and not to the referee. In most instances, it is difficult for the referee to see violations in a line owing to the fact that he is following the progress of the ball.

7. After a touchdown or field goal, the captain has the choice of receiving or kicking on the following kick-off. This choice once made is not revocable.

8. If a substitution is made while time is not out, a time-out is charged. Play must proceed as soon as the substitution is made and the offending team is not allowed the two minutes. If the captain desires a time-out under the above condition, a time-out is allowed and an additional time-out is charged against the team. In order to avoid being charged with two time-outs, the captain should request time-out and then make the substitution during the two minutes. This, of course, cannot always be done as coaches sometimes send in a substitute, unknown to the captain, but it is well that the rule be understood as there seems to be some confusion in relation to its application.

9. In all shift or huddle plays, all players of the offensive team must come to an absolute stop and remain stationary in their positions without movement of the feet or swaying of the body, head or arms for at least one second before the ball is put in play. Occasionally during a game, a team will start their plays following a shift or huddle before the one second interval or the team may, during the game, develop what is known as a fast shift without realizing it. If a penalty is inflicted for fast starting following a shift or huddle, the captain naturally wishes to know how much too fast it is in order that ensuing plays may be legal. Practically all referees time the shift or huddle by a fast count of six. If the captains understand this before the season starts, it will possibly make it easier for them in the timing.

10. Substitutes report to the umpire. If the captain will keep this in mind and advise the players to report to the umpire, whose position on the field is back of the defensive team, play can proceed more quickly. If the substitutes first report to the referee, then the referee must send them to the umpire to report.

11. After a safety, the team scored against must put the ball in play by a punt, drop-kick or place-kick from the 20-yard line or from some place back of it. It cannot be put in play by scrimmage. If the kick goes out-of-bounds, it belongs to the receiving team where it crossed the side line, even though the ball does not go ten yards.

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The Development of Young Tennis Players

By Eugene Lambert
University of Arkansas

ABOUT two years ago the Junior Davis cup movement started with an idea, suggested by Capt. J. H. Bishop of Culver Military Academy, to develop some 200 ambitious young players, to make them creditable representatives of the United States Lawn Tennis Association both on and off the court and to raise the standard of their play and sportsmanship in tournament competition.

Similar plans were in successful operation in Europe and as this one grew in popularity in this country, everyone wondered why it had not been thought of before. For several years the United States had been on the outside looking in at the Davis cup. The results of the movement will not be apparent for several years but it is interesting to glance back at some of the details in connection with its short span of operation.

Sectional Associations were quick to take up the plan and Junior Davis cup committees in twenty-two key cities throughout the United States organized squads, the individuals ranging in age from fifteen to twenty, chosen because of promise of future skill, good character, and a willingness to work hard under competent leadership and coaching.

Each city has made an effort to furnish coaching in strokes, tactics, and physical conditioning, by the best available amateurs or professionals. Sportsmanship and court manners have been placed equal to stroke production in this developmental process.

The boys responded with a great amount of enthusiasm, no doubt visualizing themselves as future cup defenders as indeed some of them probably will be. Several of them, helped along by this movement are now successful in major tournament competition. Thus, the tennis horizons of these young hopefuls have been greatly extended, and those with both skill and determination are insured a brilliant future.

After administrative detail had been attended to, it was necessary to establish some definite policy in regard to the kind of coaching that would be given. There are many ways to play tennis successfully and although certain mechanical laws are basic, individuals differ in their adaptations.

The wrong kind of coaching was believed to do more harm than good. It would not be wise to try to make too many changes or confusion would be the result. It was, therefore, the problem of the National Association to lay down some

sound fundamental principles for the coaching of these boys and juniors which would help them in sectional, national, and even international play.

Mr. Pate's Letter

On March 19th, 1937, Mr. Walter L. Pate, Chairman of the Davis Cup Committee of Management wrote to Mr. Frank D. Fulton in charge of the Chicago Junior Davis Cup squad setting forth some points which he thought would be sound in coaching these junior players. This letter contained a very great amount of sound advice and Mr. Holcombe Ward, President of the United States Lawn Tennis Association sent copies of it to the other squad coaches. Its principles thus became a statement of the coaching policy of the National Association for the players.

I would like to take the liberty of discussing at some length the main points of this letter. They are of such a nature that their application to most any type of game will produce excellent results.

Coaching Hints

SPEED IS ESSENTIAL IF ONE IS EVER TO PLAY FIRST CLASS TENNIS. Accuracy should precede speed to some extent but it must be realized by ambitious youngsters that the "great players owe their successes to speed and severity, consistent with reasonable control and that safety, accuracy, and interminable retrieving, even if developed to the highest degree will prove insufficient equipment with which to reach the top."

The great players had speed. The best defense is a good offense and offense is impossible without speed. Controlled severity should be the aim of the younger players.

One of the brightest of the junior stars last year, Don McNeill of Kenyon College, was looked upon with much favor by the United States Lawn Tennis Association as a player with a great deal of promise for future development because he had speed. It was a joy to see him smack the cover off the ball with his backhand. His ground strokes made volleying look easy.

As Tilden pointed out many times, old Joe Gettum will never rise above being just an average club player but young Pete Swattum has real possibilities if properly handled and coached.

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strokes must be mastered. It should be impressed upon those wishing to play top-notch tennis that they must bring all their strokes up to a certain standard. One must be able to go in and volley or step back and smash as the occasion arises.

I have sometimes helped youngsters make a classification chart of their strokes in ladder fashion. The stroke considered strongest is placed at the top and the weakest at the bottom. To carry the plan a step farther, each stroke may be assigned a relative value based on 100 for the one at the top. In this way the individual's attention is focused on the fact that the effectiveness of his total game depends on how well the parts work.

The coach may say to his protégé, "You don't win a point a set on your volley," or, "You are never able to handle a smash behind your service line."

Eventually, the making of the strokes should become so mechanical that the mind will be left free for consideration of questions of strategy. Before this point is reached a great deal of attention must be given over to the skills, mentioned above.

In tournament play a player with a weakness will not get very far because this weakness will be ferreted out and exploited to bring his defeat.

SOUND GROUND STROKES SHOULD BE BACKED BY AN AGGRESSIVE NET ATTACK. The objective should be to get to the net as soon as practicable where it should be possible to dominate the play both in singles and doubles. It is not advisable for the player habitually to follow his own service into the net but his constant objective should be to get to the net soon afterwards for the kill. Johnson has always been pointed out as the best example of how to do this. In going to the net under a forcing shot, the slightest hesitation is usually fatal. Johnson went to the net infrequently under his service, but after the ball was in play he seized the first opportunity. When a ball came to Johnson, he decided during its flight whether he could stroke it with enough confidence to go in under and if he determined that he could, his back foot swung around with the finish of the stroke in the first stride to the net.

The reason for so much ineffective volleying is that it is done too far from the net. The closer to the net that it is done, the more angle is possible, and therefore the more chance there is to hit down on the ball, and the less chance for error.

THE EFFECTIVENESS OF GROUND STROKES DEPENDS ON LENGTH, DIRECTION, SPEED, AND SPIN. Length is a quality which should be cultivated from the outset. Helen Wills Moody said that shots were no good against experienced players where the ball fell more than two feet from the base or sideline.

It is difficult for an opponent to make a

winning shot from behind his base-line but this difficulty is considerably lessened if he is allowed to take the ball on the rise just behind his service line and be on top of the net before the player starts his stroke.

A reasonable amount of top spin is desirable but this spin should not be exaggerated so that the loss of speed is too great. Top spin is best applied by starting the stroke slightly below the ball and finishing slightly higher rather than by closing the face of the racket too soon with a flexible wrist.

The flat drive is harder to control because it has a trajectory more nearly straight, and too many errors result if the flat drive is hit with speed.

In the forehand stroke, the racket should be grasped with the hand approximately parallel to the face which is known as the Eastern grip. The backhand grip has the hand at right angles to the racket. The wrist should be used as a hinge in making these strokes but it should be locked when the ball is met to insure a full arm follow-through.

IN MAKING GROUND STROKES THE ARM SHOULD BE KEPT COMFORTABLY STRAIGHT. More power will be the result and the constant distance of the center of the racket from the body will cause more balls to be hit solidly. A straight arm would thus serve the same purpose that the straight left arm in golf does in measuring the distance to the ball.

THE BALL SHOULD BE WATCHED INTENTLY RIGHT UP UNTIL THE TIME IT IS STRUCK. Many players think that they do this, but in reality they do not. A large majority of their strokes are made with the eyes focused on actions of their opponent. Stroking the ball in this way might be compared to threading a needle with the eyes focused a yard or two out in front. The focus must be brought in as the ball approaches, if last instant movements in its course are to be taken into consideration.

It goes without saying that it is necessary for the feet to be sideways to the net when the strokes are made. This body position is necessary in all games where a throwing or striking motion is made. A cardinal fault of numerous players is that they wait until the ball is upon them before they start getting body position. They should start early and be ready for the ball when it comes off the ground. The instant that it is determined approximately to what point the ball is to go, they should hurry there, get the racket back early and be ready.

The tennis stroke should be made with the entire body. Too many players make it with the arm only, with a bent elbow and weak wrist. Under these circumstances speed and control are impossible as the face of the racket is hardly ever constant.

IN MAKING THE BACKHAND STROKE, THE BALL SHOULD BE HIT FROM TWELVE TO FIFTEEN INCHES IN ADVANCE OF THE RIGHT HIP. If the ball is struck in front of the body as in the case of the forehand, the body will be hopelessly in the way of free arm movement. This fault is also more accentuated if the footwork is faulty. In this stroke it is well for the player to make the back swing a little higher than his shoulder with the right hip drawn back.

It is a question as to just when the player should start taking the ball on the rise. From the beginning it should be taken no later than the top of its bounce. It is a big advantage for a player to take the ball early as his opponent then has less time to move into position.

Fred Perry marks the beginning of his climb to prominence as that time when he started taking the ball on the rise. Successful net play and the early ball certainly are of equal importance.

THE BOYS SHOULD BE TAUGHT TO KEEP AWAY FROM THE BALL. This tendency should be exaggerated at first by the instructor so that he may be sure that it gets proper attention. "Keeping away from the ball makes for free, confident, hard hitting, and will materially help to eliminate error."

Track & Field Throwing the Javelin

(Continued from page 15)

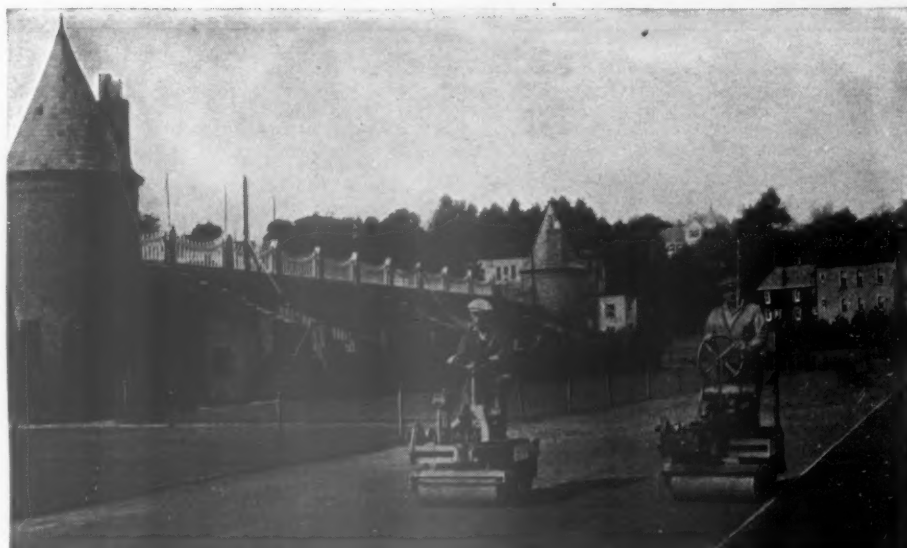
This position includes a fairly straight left leg, toe pointed forward, back leg bent and body and weight over the right leg.

His hips and shoulders now turn forward, and here it is found that by carrying the javelin away from the body the plane of the carry has not been changed by the turn of the hip and shoulders. The wrist is now turned so that the hand is facing up. With leg drive, the body snapping forward and up, the arm is brought over the shoulder in a full arm drive. By slightly dragging the wrist at the beginning, a strong wrist snap is given at the end of the throw. As the body is propelled forward in the final throw, it is reversed and the arm extended up. During the run and take-off, the javelin is carried at the flight angle and as far as possible in a perfectly straight line.

*William Reitz by Ben Person,
Publicity Director*

William Reitz, before graduating from the University of California at Los Angeles, was for three years a first string forward and guard in basketball and a member of the track team.

During his three-year career, before which he had never thrown the javelin



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W. H. Cowell, Secy., American Football Coaches Association,
University of New Hampshire, Durham, N. H.

Note: The 1938 meetings will be held at the Hotel Sherman, Chicago, Illinois, during the week of December 27th to the 31st. Watch for further particulars.

and during which he suffered a bad arm in 1935, he was under 200 feet nine times and over 200 feet seventeen times.

Although Alton Terry threw farther than any other American last year, Reitz defeated the Hardin-Simmons thrower twice, the only times they met, I believe. Reitz won, 214 feet 11¼ inches to 211 feet 6 inches at the West Coast Relays, May 15, and 224 feet 9¾ inches to 216 feet 3¾ inches in the National A. A. U. meet in Milwaukee, July 2 and 3, when Terry placed third behind Reitz and Bob Peoples. Coach Trotter is considerably irked that Terry should be named to the All-American team picked by Daniel J. Ferris of the A. A. U. on January 23 of this year.

Other than sane diet and light workouts, Reitz had no training schedule. He found that heavy work actually hampered his throwing, notably, before the Southern California meet on April 24, 1937, when he trained hard every day for two weeks and could throw only 188 feet 2 inches. After that he jogged lightly during the week, worked on form and threw not more than 75 feet.

He was an exceptionally fine competitor, doing his best throwing against the hardest competition. He also high-jumped 6 feet 2½ inches and threw the discus 133 feet.

Donald L. "Don" Johnson by Mike Ryan, Track Coach, University of Idaho

Donald L. "Don" Johnson, Idaho's premier athlete comes from Troy, Idaho, a small country village about ten miles from Moscow, seat of the University of Idaho. He is 21 years of age, stands 6 feet 2 inches in height, weighs 195 pounds and is of Norwegian extraction.

He is an exceptionally well-built, handsome looking chap, is finely co-ordinated and has a deep sense of rhythm. Don, a great lover of athletics and a courageous competitor, is at his best when the going is toughest. He excels at track and basketball, being captain of the fast stepping Idaho basketball team, does a good job as a right-handed baseball pitcher and, although he has never played college football, he had a good record in high school. He is also a talented musician and an accomplished tap dancer.

Johnson started his athletic career when a small boy on his father's farm. He cannot remember the time in his life when he was not practicing some phase of track. Entering Troy High School he lost no time in establishing an enviable record in athletic competition. He has made Ripley's "Believe It or Not" column for being his high school's only representative and having won single-handed for his school the State Interscholastic Track and Field Championship, taking two first and three second places in the championship meet

a total of nineteen points to his credit.

His record in collegiate track and field circles, since entering the University of Idaho in the fall of 1934, has been an enviable one and his development to the top flight of collegiate performers has been rapid. In his freshman year he upheld his reputation as a one-man track team by dominating the weight events and placing in the jumps in all of the meets. In his sophomore year he set new Idaho records in the shot and javelin. He won the javelin throw in the Pacific Coast Intercollegiate Conference meet with a record performance of 204 feet 7¾ inches. He took fourth in the javelin at the National Collegiate Championships at Chicago and qualified at Milwaukee for the final Olympic trials. He took third in the javelin at the National A. A. U. Championships at Princeton and fourth in the final Olympic trials in New York City.

In his junior year he created new Idaho records in the shot, discus and javelin. He won the javelin, took second in the shot and third in the discus in the Northern Division Championships of the Pacific Coast Conference; second in the javelin in the Pacific Coast Conference Championship meet; third in the javelin and fifth in the discus in the National Collegiate Championships and won the javelin in the dual meet between the Big Ten and the Pacific Coast Conference at Los Angeles with a throw of 210 feet.

Johnson will enter his final year of collegiate track and field competition this coming spring as the outstanding weight thrower in the Pacific Northwest and probably the best all-round weight man in the United States. He should be due for a great year and it should be interesting to watch his progress. He already has bettered 50 feet in competition in the shot, 150 feet in the discus, 217 feet in the javelin, 152 feet with the hammer and 50 feet with the 35-pound weight. He clears 6.1 in the high jump and 22.6 in the broad jump.

Don is a very conscientious hard worker. He trains every day except Sunday and the day before competition, about two hours for each workout. He practices with all of the weights and does a little jumping every day. He works very fast and has to be held in check sometimes so that he will not over-do. He uses a great deal of speed in the circles in both the shot and discus and has much zip or explosion for the throw. He does a great amount of throwing from a stand in the circle without putting too much effort in his arm, rather stressing leg and body action. He has very good form.

Due to a sore elbow, which causes him much inconvenience and pain at times, Johnson probably trains differently and less with the javelin than most javelin throwers. He very seldom runs down to the take-off and lets go. He gets his

for MARCH, 1938



WHAT HAPPENS AFTER THE **CRACK** OF THE BAT AND THE BALL

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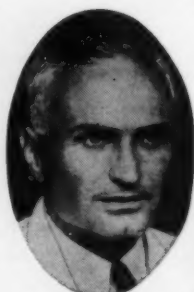
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training in this event by handling the stick, throwing short distances from a stand, sometimes with a reverse and sometimes without. He also throws at a target in the ground at a distance of from 60 to 75 feet, driving his body into the throw and following through on the reverse. His run to the take-off is short and fast. Sometimes he will go several days without touching the javelin. He gets his best throws with the javelin when he is training regularly with the shot and discus. The distance of his throws has fallen off when he concentrates on the javelin. He runs around the track every day and sometimes works out with the sprinters.

Johnson is a fine boy with whom to work. He has a good disposition, is constantly on the job, and is an ideal trainer having no bad habits. For a big man he has a small appetite and prefers vegetables and fruit to meat. However, he eats some meat. He has a sweet tooth and is fond of candy and milk shakes.

*William Guckeyson by Geary Eppley,
Director of Athletics*

William Guckeyson entered the University of Maryland from the Bethesda-Chevy Chase (Maryland) High School where he played soccer, baseball and took part in track events.

At the University of Maryland, from which he was graduated in 1937, he won letters in football, baseball, basketball and track; the Silvester Watch, an award for the man who typifies the best in college athletics and the Maryland Ring, an award for the man who is adjudged the best athlete of the year.

Guckeyson participated in track in 1935 and 1937. In 1936 he stayed out of track and played baseball because of a shoulder injury that he had received in football. The discus, shot and javelin were his three field events and he was most proficient in the javelin. The two best records to his credit are 207 feet 5 inches at the National Junior A. A. U. Championships at Lincoln, Nebraska, where he took second place and 207 feet 6½ inches at the National Collegiate Championships, where he took fourth place.

In his training program Guckeyson did a great deal of lobbing the javelin, always being careful that it went off in a straight line. It required patience on Guckeyson's part to perfect the Finish system of steps. During the period of actual competition, he threw hard only once a week. His main fault was not having a high enough trajectory.

Guckeyson has his athletic future before him, as he was only 21 years old when he was graduated from Maryland. He is a natural athlete and is always in condition because he has no bad habits. He is very fond of outdoor life, especially fishing, and is somewhat of a taxidermist.

Building International Friendship Through Track and Field

By Johnny Mach

High School, Williston, North Dakota

FOUR years ago at a high school district track meet in North Dakota, Mr. Schlosser, a prominent business executive in the province of Saskatchewan, approached me on the possibility of running off several track and field events between Saskatchewan and North Dakota athletes. Out of our conversation that day was born the International Track and Field Meet.

The first meet held in 1935 was staged at Estevan, Saskatchewan, as a feature of the provincial fair held on Queens Day, July 1. The events of 1936 and 1937 have likewise been staged at Estevan. The initial meet proved so popular that it has become an event much looked forward to by the sports fans of the province of Saskatchewan and the state of North Dakota. Joe Griffiths, physical director of the University of Saskatchewan described the event as the "biggest sporting event of Western Canada." Griffiths assembles the Canadian entrants while I have selected the representatives of our state. Our rules are simple: The athletes must be strictly amateur in rating. Since development in track and field is not so far advanced in Canada as in the states, we permit Canadian entrants to be slightly older than the Americans. The North Dakota team has been selected chiefly from the outstanding high school stars of the state with a few college stars to lend good team balance. Every effort has been made to select entrants that will insure rather close competition.

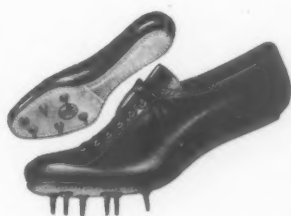
Schools in Canada generally continue in session until the latter part of June, hence the athletes there have an opportunity to remain in active training until the day of the meet. Our situation has been somewhat different since our schools generally close the latter part of May. However, this has proved no great handicap to us. The North Dakota athletes in the past have been selected for the most part during the State High School Track and Field Meet. A training program is forwarded to each athlete and he trains at home during the month of June. A day or two before the meet is to be staged, the athletes are assembled at a central meeting place and transported by bus into Canada.

Proof of the boys' interest in the meet is reflected in their performances. In every instance, every boy I have taken to the meet in the past three years has bettered his best previous mark here. No doubt the extra month of training, specialized drill in only one or two events instead of several, and the generally favorable summer weather, are chiefly responsible for the improved showings.

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The Latent Power of Sugars

By C. W. Hackensmith

Intramural Supervisor, University of Kentucky

At one time or another coaches in colleges and high schools have experimented with the use of sugar or foods containing simple or complex sugar as a source of extra energy for their athletes.

Some of the coaches experimenting with the various forms of sugar, maintain a skeptical attitude toward its benefit stating that they see little change in the physical status of their boys, while others definitely endorse the ingestion of sugar and report a noticeable pick-up in the bodily vigor of their charges during a contest. Since many authorities and communities frown upon the use of stimulants in any form, even though physiologically harmless, many coaches refrain from the use of sugar in any state. Finally, many coaches believe that good physical condition is all that they need of their boys and sugar is needless under this circumstance.

The mere fact that many coaches experimentally use sugars in an attempt to provide a pick-up for their boys during various athletic contests indicates that there is a definite interest and desire among coaches to know more about the value of sugar as a source of extra energy.

It is definitely known that various trainers of athletic teams use two to four lumps of ordinary table sugar in some liquid medium such as hot coffee and tea before game time. Cubes of sugar are often furnished players during time-out periods. Many trainers take advantage of the simple sugars furnished through oranges and provide one to three oranges per player during the sport season. A commercial preparation of a concentrated simple sugar (dextrose) in the form of tablets has become popular as a means of furnishing extra energy to athletes. Honey, specially prepared candies, syrups, and various fruits rich in sugar content are provided with the purpose of furnishing extra energy against future requisitions by fatigue.

It might be well to mention here that sugar is usually given in the form of dextrose which can be generally absorbed by the blood stream in fifteen minutes or less from the time of ingestion. Dextrose is known as a simple sugar or a monosaccharide and is already in a digestive state acceptable for immediate absorption by the body. Dextrose is found throughout the vegetable kingdom, chiefly in fruits and plant juices. It is especially abundant in grapes, of which it often constitutes 20 per cent of the weight of the fresh fruit and considerably more than half of the solid matter. Commercially it is made from starch by hydrolysis with acids and sold at a reasonable price.

Ordinary table sugar is known as sucrose and is classified as a complex sugar

or a polysaccharide. This form seems to be popular with coaches for immediate energy production. Sucrose is found in the sap or juices of a variety of plants, the sugar cane, the sugar beet, and the sugar maple being the most important sources commercially, but many common fruits and vegetables contain considerable amounts. Sucrose is a combination of two or more molecules and not in the simple one molecule form of dextrose. This situation means that sucrose or table sugar must be digested before it will be taken up by the blood stream and this requires a little more time than does dextrose for absorption.

Since the use of sugar is a subject of conjecture among so many coaches it might be well to discuss some of the investigations that have been conducted among athletes.

In the following discussion the coach must keep in mind that all these studies are based on the importance of sugar as a source of energy when administered previous to a contest or game or during it.

A study made by Trimble and Maddock¹ on a group of Harvard students demonstrated that not only does an individual blood sugar content maintain an even level through a twenty-four-hour period, but also varies little between individuals during hourly tests. The blood maintains a constant sugar content of about 0.08—0.11 per cent.

Mild exercise produces little change in blood sugar level, but as the severity of the exercise increases there may be a rise in blood sugar content provided, of course, the exercise is of short duration. Edwards, Richards, and Dill² in their investigation at Harvard University found that players and substitutes in a football game showed an absence of hypoglycemia. The authors think that the result of their investigation was due to the fact that the athletes were kept on a carbohydrate diet and were usually given fifty grams of dextrose in the form of candy and syrup just before a contest.

A study made by Levine, Gordon, and Derrick³ of the contestants in the annual American Marathon held at Boston in 1924 clearly demonstrated the serious effect resulting from the depletion of sugar in the blood stream. The winner of the marathon had a comparatively normal blood sugar level while the four prostrated and the one unconscious runner had a blood sugar level below normal.

In a similar race in 1925, Gordon, Kohn, Levine, Matton, Scriver, and Whiting⁴ placed some of the contestants on a carbohydrate diet and fed them especially prepared candy containing three grams of sugar before the race. The four contest-

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ants who finished the race markedly prostrate the previous year finished in much better shape and showed a decided rise in blood sugar content over the former year. One participant who did not have the advantage of a carbohydrate diet nor the especially prepared candy found the going extremely hard and was seized with pangs of hunger, a sensation that often occurs to marathon runners. This contestant ate a bar of candy and an orange at one of the relief stations provided for the runners at intervals along the course and continued the race feeling better, only to become completely exhausted after he had used the additional source of energy. The contestants who were on a carbohydrate diet and who had taken candy previous to the race expressed themselves as feeling much better than they had the previous year.

In 1935 the author⁵ made a study of four athletes in an attempt to find if the administration of sugar in the form of dextrose had any effect on the athlete in doing increased muscular work. In order to provide a check on absorption time the periods between the ingestion of the dextrose and the time of work ranged from fifteen to forty-five minutes. The doses of dextrose varied from 0.5 gram to 1 gram per kilogram of bodyweight.

The athletes did their muscular work on a specially made stationary bicycle (ergometer) with an attachment to measure the number of foot pounds of work accomplished against a resistance. In order to control as many variables as possible the temperature of the experimental room was kept constant, food intake supervised, the resistance against the wheel of the ergometer was maintained at the same poundage throughout the experiment, and the hours between 4:00-6:00 P.M. reserved for experimental purposes since a study by Trimble and Maddock¹ showed from hourly analysis of capillary blood that the sugar content is lowest then.

Creating Interest in Track in a Small High School

(Continued from page 19)

beating his own best mark as he does in beating some other boy. This is especially good to keep up the interest of the freshmen who, as a rule, have little chance of scoring in the regular meets.

We have for each individual another card (Figure 2) that shows what improvement he is making from year to year. In column A of the freshman year we place the first time or distance we have for this year. In column B the best time or distance for his freshman year is listed. For the other years, only his best times and distances are recorded. We keep one of these cards for our records and make out a duplicate for each boy to tape on the inside of his locker door.

These cards are especially valuable for

A record of the muscular work accomplished was kept of each athlete through a normal record (without administration of any type), a record with an intake of saccharine (no energy value), and lastly, a record after the administration of dextrose. Saccharine and dextrose were both administered in a pint of tap water.

Of all the various dosages of dextrose and the diversified absorption times used in the author's experiment, the results suggest that the greatest amount of muscular work can be accomplished by athletes when they are given 0.5 grams of dextrose per kilogram of bodyweight (roughly three-fourths of an ounce per 100 pounds of bodyweight) and allowed thirty minutes absorption before the initial start of work.

With 0.5 gram per kilogram of bodyweight and fifteen minutes absorption the athletes showed an average increase of 5 per cent over the normal and psychological (saccharine). With 0.5 gram and thirty minutes absorption the average increase in muscular work was 26 per cent. Thirty minutes absorption and 1 gram of dextrose per kilogram of bodyweight showed an average increase in muscular work accomplished on the ergometer of 14 per cent.

1. H. C. Trimble and S. J. Maddock. 1929. The fluctuations of the capillary blood sugar in normal young men during a twenty-four hour period. *Journal of Biological Chemistry*, 81: 595.

2. H. T. Edwards, T. K. Richards and D. B. Dill. 1931. Blood sugar, urine sugar, and urine protein in exercise. *American Journal of Physiology*, 98: 352.

3. S. A. Levine, B. Gordon and C. L. Derrick. 1924. Some changes in the chemical constituents of the blood during a marathon race. *Journal of the American Medical Association*, 82: 1778.

4. B. Gordon, L. A. Kohn, S. A. Levine, M. Matton, W. M. Scriver and W. B. Whiting. 1925. The sugar content of the blood in runners following a marathon race. *Journal of the American Medical Association*, 85: 508.

5. C. W. Hackensmith. 1935. A comparison of work accomplished by athletes and non-athletes when given varied doses of dextrose with diversified absorption times. Thesis. University of Kentucky, Lexington, Kentucky.

the freshman who believes that he has no chance to develop in an event; they show him that some of the juniors and seniors who now appear as stars to him, could do no better than he in their freshman year; they suggest to him that training begun in the first year may have accomplished something for these upper classmen and further, the records on the cards inspire the first year man to surpass the star's time or distance made when a freshman.

It is also a good policy to keep the school records framed and on display somewhere about the school. Frequent reference to them gives the boys an objective for which to work. They will not be satisfied with being the best in their event in school at the present time but

will try to break the school record. Posting county and conference records on the bulletin board is also good.

Pictures and Publicity Helpful

Pictures of famous track and field stars and articles about these performers should be kept on the bulletin boards; the boys should be encouraged to study the results of track meets of other schools nearby. Track should be given the same publicity as the other sports. The results of the meets and write-ups of individual stars in the newspapers keep the boys, the school and the patrons interested.

Handbalancing Routines

(Continued from page 18)

Topmounter executes a dead press to a low hand-to-hand balance.

Topmounter lowers himself and winds himself around one arm of understander.

Understander lowers topmounter to his side from where the routine started.

The intention has not been made to present routines which are suitable for everybody. Rather a sample of elementary, intermediate, and advanced routines have been presented which will serve as a guide in planning proper continuity for a routine. At a future date, these articles on handbalancing will continue with triple and quadruple balancing. In this case, the act is built around three or four men instead of two.

The author wishes to thank Ray Weiss for his assistance in the preparation of the complete series. In addition, he is grateful to Bob Clow, Joe Giallombardo and other members of the University of Illinois Gymkana Troupe for their valuable contribution.

The New Track and Athletic Field at West Point

(Continued from page 6)

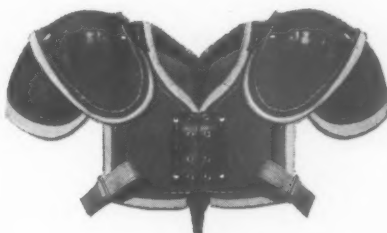
soted timbers with lag screws, quarter-inch washers being used between rail and curbing to allow for the draining off of surface water.

At this writing, the track has been under snow most of the winter and is awaiting the spring thaw. The topsoil areas are seeded and should have a good stand of grass by summer. The baseball diamonds were properly graded but infields have not been laid out. Football fields will not be used until next fall. The armory and field house is rapidly approaching completion and will be available next year for winter and early spring workouts.

It is expected that the new track will be used for the first time when Army opens its dual-meet schedule with Colgate University on April 23rd.

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